

AGENDA
MONONA PARK AND RECREATION BOARD
MONONA LIBRARY LOWER LEVEL
1000 Nichols Rd, Monona WI. 53716
January 10, 2017
6:00 PM

1. **Roll Call**
2. **Approval of the Minutes**
 - A. October 11, 2016
 - B. December 13, 2016
3. **Appearances**
 - A.
4. **Unfinished Business**
 - B. Facility Use Agreement with Madison Youth Sailing Foundation
5. **New Business**
 - A. Bridge Rd Park Public Input Session
 - B. Ahuska Park UniverCity Alliance Report Discussion
6. **Director's Report & Questions to Staff from Committee**
 - A. Jake Anderson – Parks & Recreation Director
7. **Adjournment**

NOTE: Upon reasonable notice, the City of Monona will accommodate the needs of disabled individuals through auxiliary aids or services. For additional information or to request this service, contact Joan Andrusz at (608) 222-2525 (not a TDD telephone number, Fax: (608) 222-9225, or through the City Police Department TDD telephone number 441-0399.

The public is notified that any final action taken at a previous meeting may be reconsidered pursuant to the City of Monona ordinances. A suspension of the rules may allow for final action to be taken on an item of New Business.

It is possible that members of and a possible quorum of members of other governmental bodies of the municipality may be in attendance at the above stated meeting to gather information or speak about a subject, over which they have decision-making responsibility. Any governmental body at the above stated meeting will take no action other than the governmental body specifically referred to above in this notice.

MINUTES
MONONA PARK AND RECREATION BOARD
MONONA CITY HALL CONFERENCE ROOM
5211 Schluter Rd, Monona, WI. 53716
Tuesday, October 11, 2016

The regular meeting of the Park and Recreation Board for the City of Monona was called to order by Chair Chad Speight at 6:32 pm.

Roll Call

Present: Chair Chad Speight, Greg Anderson, Dan Coyne, Jeff Hinz, Jennifer Kahl, Pat Howell, Carol Poole, Karen Turino Parks & Recreation Director Jake Anderson

Absent: Co-Chair Andrew Kitslaar

Approval of the Minutes

Dan Coyne made a motion to approve the minutes from September 13 meeting, Pat Howell seconded the motion. Motion Carried unanimously.

Appearances

A. Suzanne Wade/Kourtni Barnes – Monona Farmer’s Market

Ms. Wade gave a report of the Monona Farmer’s Market at Ahuska Park and introduced new Market Manager Kourtni Barnes. The board thanked the group for all the hard work and wonderful opportunities the Farmer’s Market provides for the Monona community.

Unfinished Business

A. Schluter Park Update

Director Jake Anderson provided a verbal update on the status of the Schluter Park project including work on punch list items for the building, landscaping, and playground installation scheduled for the end of the month. Committee members were happy with the progress and had the following questions:

Greg Anderson – Is there any way to remove or relocate the pole that is in the middle of the park?
Anderson will check with utility company

Pat Howell – Will there be rakes around the beach? Anderson will have a bin for rakes for beach sand along with community toys for the beach. Anderson noted that there will be more seaweed removal and beach grooming in 2017. Howell also asked if there will be shoreline cleanup before the park opens in 2017.

Dan Coyne – Concerned about parking in front of the park on Winnequah Rd with pedestrian traffic and bikers. Anderson noted that a recommendation may be sent to Public Safety Committee/City Council for consideration of No Parking on Winnequah Rd in front of the park.

B. 2017 Capital Budget Update

Director Anderson provided an update on the Capital Budget that Council reviewed proposed Capital Budget on October 3rd, and will have first reading on October 17th.

New Business

A. Monona Swim and Dive 2017-2018 Special Event Discussion

Phil McDade & Rhonda Holler-Steenhagen presented information on the All City Dive Meet in 2017 and All City Swim Meet in 2018 to the board including photos of parking and event areas. The 2017 All City Dive Meet will be held on July 24-25 with warmups on July 23. Monona Swim & Dive will work closely with Parks & Rec and appropriate city departments in the planning and execution of this event at the Monona Pool and Winnequah Park.

Director's Report & Questions to Staff from Committee

A. Jake Anderson – Parks & Recreation Director

Anderson noted the Fall Festival on Oct 7-9 was a great success with excellent weather. Thanks to all the groups participating. He also mentioned park shelters will be winterized for the season next week, and that overall Special Event Revenue is up for the year.

Adjournment

A motion to adjourn by Jeff Hinz seconded by Greg Anderson was carried at 8:16 pm.

DRAFT

MINUTES
MONONA PARK AND RECREATION BOARD
MONONA LIBRARY MUNICIPAL ROOM
1000 Nichols Rd Monona, WI. 53716
Tuesday, December 13, 2016

The regular meeting of the Park and Recreation Board for the City of Monona was called to order by Chair Chad Speight at 6:02 pm.

Roll Call

Present: Chair Chad Speight, Co-Chair Andrew Kitslaar , Greg Anderson, Dan Coyne, Jeff Hinz, Pat Howell, Carol Poole, Karen Turino Parks & Recreation Director Jake Anderson

Absent: Jennifer Kahl

Approval of the Minutes

Director Anderson noted the minutes from October 11th were not completed yet and requested this item to be tabled. Pat Howell made a motion, seconded by Karen Turino to table approval of the minutes. Motion Carried.

Appearances

A. UniverCity Presentations

The City of Monona in conjunction with UW-Madison formed a partnership called the UniverCity Alliance which aims to connect education, service and research on campus with cities to further the practice of sustainability, and give students real world challenges to work on. Ahuska Park was selected as a site for future improvements. Two groups presented their projects, a turf management plan for athletic fields, and a site master plan for park improvements. Both presentations were well received by the Parks & Recreation Board and members of the audience. Both reports are attached to these minutes.

Unfinished Business

A. Facility Use Agreement with Madison Youth Sailing Foundation

Director Anderson noted that there was discussion with the Madison Youth Sailing Foundation, however a draft facility use agreement was not in place. He requested this item to be tabled.

Karen Turino made a motion, seconded by Jeff Hinz to table this item. Motion Carried.

New Business

A. Park 2017 Capital Budget – Engineering Discussion

The Parks & Recreation Board was very impressed by the student presentations and Director Anderson asked all members to review the plan along with the 2011 Master Site Plan to develop priorities for the next step of developing an RFP for engineering services. No action or recommendation was taken at this meeting.

Director's Report & Questions to Staff from Committee

A. Jake Anderson – Parks & Recreation Director

Anderson thanked sponsors, volunteers, and staff for their great effort for the annual Breakfast with Santa & Holiday Lights Event. Ice Skating is right around the corner on the lagoon.

Adjournment

A motion to adjourn by Jeff Hinz seconded by Greg Anderson was carried at 7:30 pm.

December 13, 2016
Civil Engineering 578: Capstone Design
Final Engineering Design for Improvements to Ahuska Park

Park improvements include the following (refer to Figures 1 and 2):

- | | | |
|---|---------------------------|-------------------------------|
| A. Porous asphalt pathway | D. Rain garden | I. Gravel maintenance path |
| B. Parking lot 34-stall expansion | E. Soccer field regrading | J. Wetland boardwalk pavilion |
| C. Shelter expansion for additional restrooms | F. Grassed swales | K. Wetland boardwalk trail |
| | G. Dog exercise area | L. Observation tower |
| | H. Natural play area | |



Figure 1. Hybrid Design site layout for Ahuska Park.



Figure 2. Hybrid Design boardwalk trail layout and features.

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Figure 1. Hybrid Design site layout for Ahuska Park.



Figure 2. Hybrid Design boardwalk trail layout and features.

Economic Analysis

Opinion of Probable Cost

The final Opinion of Probable Cost (OPC) for Improvements to Ahuska Park is \$1,978,000. The OPC includes the construction cost, the land easement and permitting cost, contractor fee of 5%, contractor contingency on construction of 15%, and E Drive Design Company’s engineering design fee of 8%, to be paid after submission of final contracted services. See Table 1 for the breakdown of the final OPC by design component, land and permit cost, and contractor and engineering services.

Table 1. Opinion of Probable Cost, by component and category.

Boardwalk system includes the observation tower cost

Opinion of Probable Cost		
Category	Component	Cost
Construction	Erosion Control	\$4,000
	Stormwater Management	\$68,000
	Earthwork	\$232,000
	Parking Lot	\$234,000
	Pathways	\$107,000
	Solar Powered LED Lights	\$105,000
	Shelter Extension	\$64,000
	Boardwalk System*	\$679,000
	Dog Park	\$18,000
	Natural Play Area	\$15,000
	Landscaping	\$21,000
	Miscellaneous	\$14,000
	Construction Total	
Land Easement & Legal	2 WisDOT Parcels & Permits	\$155,000
Contractor Services	15% Contingency & 5% Contractor Fee	\$118,000
Engineering Services	8% Design Fee	\$144,000
Total Opinion of Probable Cost		\$1,978,000

Design component construction costs were determined using the Wisconsin Department of Transportation contractor average unit prices, SmithGroupJJR contractor unit prices for a similar park project, and past precedent projects from Washington and California Departments of Transportation, , and the Wisconsin Department of Natural Resources. For the complete project quantity and unit price list with projected costs, contact E Drive Design Company.

Operation and Maintenance Costs

Additional maintenance will be needed with E Drive Design Company's proposed design. More materials and time will be spent on maintaining the new features, thus increasing operation and maintenance costs at Ahuska Park.

Stormwater Management: To ensure that the stormwater structures continue working, they will need to be monitored and maintained. The permeable pavement will need to be vacuumed 2 to 3 times a year with a Hi-Vac truck, to remove any debris clogging the pores of the pavement. The grassed swales must be cleared of debris and mowed. The rain garden will need to be weeded and periodically mulched for proper vegetation growth. In addition, any new plants added to the site will need to be watered and weeded.

Boardwalk System: The boardwalk system will also require annual maintenance to ensure its longevity. Chemical sealing and treating will be applied to the timber boardwalk every 1-2 years to prevent swelling, and rotting of the wood; sealing and staining, combined, will cost approximately \$5/ square foot. Annual cleaning will cost approximately \$1/ square foot. The helical piles in the boardwalk foundation are galvanized steel to minimize corrosion in the wetland environment. The helical piles will require inspection for potential replacement after 30 years, however, typical helical piles do not require replacement until 50-70 years after installation.

Section 5

Construction Drawings

See Separate Documents

CITY OF MONONA DEPARTMENT OF PARKS AND RECREATION AHUSKA PARK SITE IMPROVEMENTS

IMPROVEMENTS TO AHUSKA PARK

PROJECT NO. 120616

DRAWINGS PREPARED BY



1415 ENGINEERING DRIVE
MADISON, WI 53706

DRAWINGS PREPARED FOR



ENGINEERING IMPROVEMENTS APPROVED BY:

ENGINEER _____ DATE _____

NOTES:

1. PHASE 2 Not in Contract

STUDENT PROJECT DOCUMENTS

The concepts, drawings and written materials provided here were prepared by students in the Department of Civil & Environmental Engineering at the University of Wisconsin-Madison as an activity in the course CEE 578 - Senior Capstone Design. These do not represent the work products of licensed engineers. These are not for construction purposes.



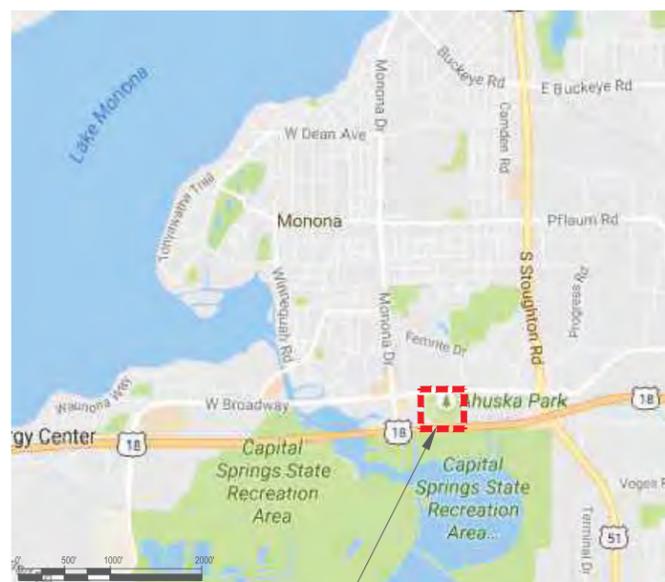
PROJECT NORTH

SHEET TITLE

TITLE
SHEET

SHEET NUMBER

G0.0



PROJECT LOCATION

INDEX OF SHEETS

SHEET NO.	G0.0	COVER*	SHEET NO.	C5.0	STRUCTURAL PROFILES AND ELEVATIONS*
SHEET NO.	C1.0	EXISTING CONDITIONS*	SHEET NO.	C5.1	STRUCTURAL DETAILS*
SHEET NO.	C2.0	SITE PREPARATION AND EROSION CONTROL PLAN*	SHEET NO.	C6.0	STORMWATER MANAGEMENT PROFILES*
SHEET NO.	C2.1	SITE PREPARATION AND EROSION CONTROL PLAN PHASE 2	SHEET NO.	C6.1	STORMWATER MANAGEMENT DETAILS*
SHEET NO.	C3.0	GRADING PLAN*	SHEET NO.	C7.0	UTILITY PLAN
SHEET NO.	C4.0	SITE LAYOUT AND MATERIALS PLAN*	SHEET NO.	C7.1	UTILITY PLAN PHASE 2
SHEET NO.	C4.1	SITE LAYOUT AND MATERIALS PLAN - BOARDWALK*	SHEET NO.	C7.2	UTILITY DETAILS
SHEET NO.	C4.2	SITE LAYOUT AND MATERIALS PLAN PHASE 2	SHEET NO.	L1.0	LANDSCAPE PLAN*
SHEET NO.	C4.3	SITE AND MATERIAL DETAILS*	SHEET NO.	L1.1	LANDSCAPE DETAILS*

* INDICATES SHEETS INCLUDED IN THIS SUBMITTAL

IMPROVEMENTS TO AHUSKA PARK

PROJECT NO. 120616

DRAWINGS PREPARED BY



1415 ENGINEERING DRIVE
MADISON, WI 53706

DRAWINGS PREPARED FOR



ENGINEERING IMPROVEMENTS APPROVED BY:

ENGINEER _____ DATE _____

NOTES:
SOURCE:



- Underground utilities shown hereon are those marked through a Diggers Hotline request and those underground utilities found through above ground indications, such as manholes, inlets and valve boxes. Buried private utility lines, such as electric lines serving the lights and other facilities on this site, were not marked and not surveyed. Call Diggers Hotline at 811 before digging.
- Elevations on this survey are based on City of Monona benchmarks provided by the City of Monona. Additional benchmarks were established as shown. The following two City of Monona benchmarks were used:
 - Top of hydrant at the corner of Broadway and Edna Taylor Parkway: 859.64
 - Top of hydrant at Broadway and the Ahuska Park entrance: 851.11
- The contour interval mapped is one foot.
- Storm sewer pipe sizes may be approximate, especially those marked with a "?".
- Features within the walls surrounding the Veterans Memorial and benches on its perimeter concrete were not surveyed.
- Tree canopies are not drawn to scale. Edges of shrubs are approximately drawn to scale.

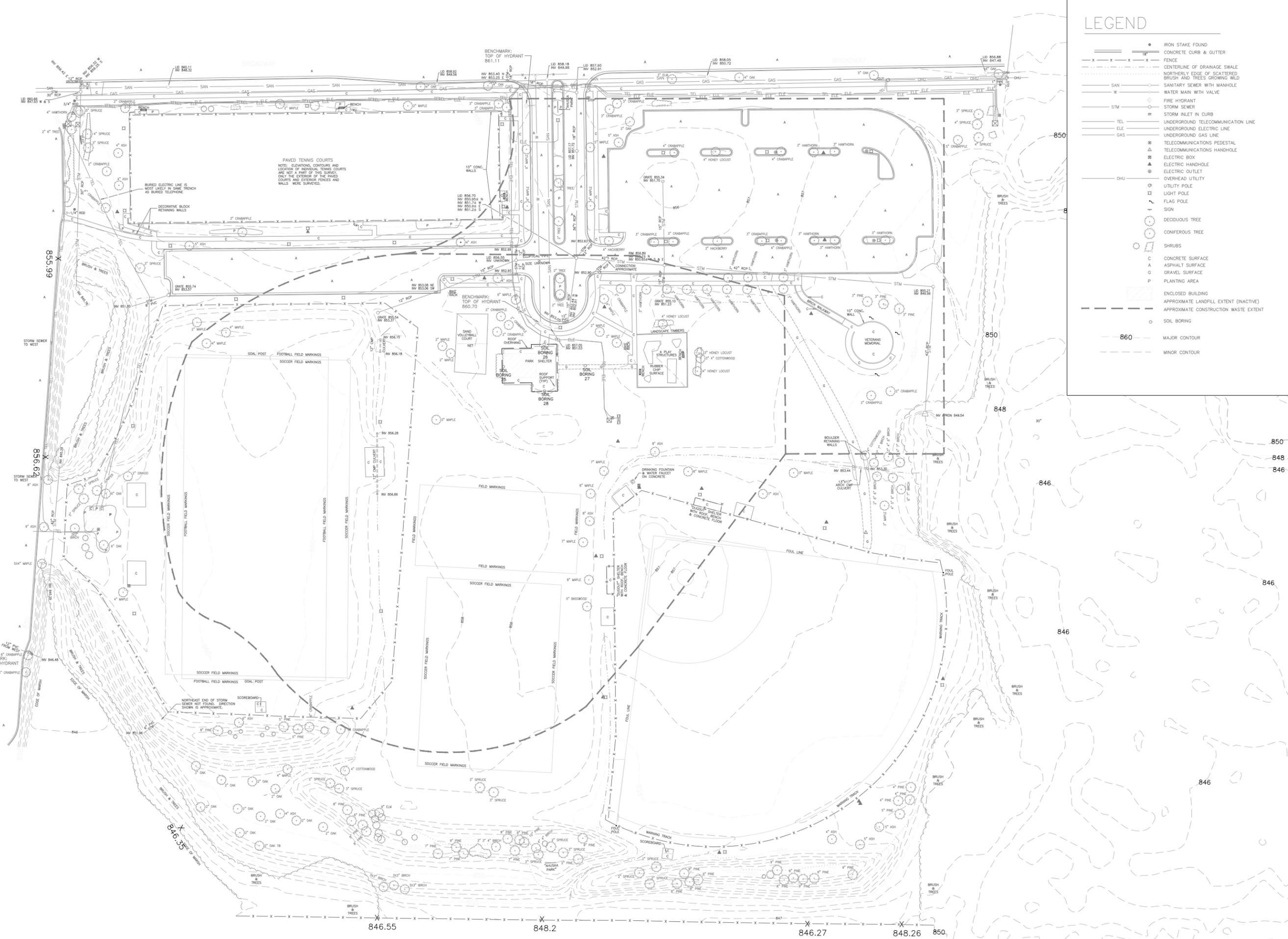
STUDENT PROJECT DOCUMENTS

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SHEET TITLE
**EXISTING
CONDITIONS**

SHEET NUMBER
C1.0



IMPROVEMENTS TO AHUSKA PARK

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MADISON, WI 53706

DRAWINGS PREPARED FOR



CITY OF MONONA
DEPARTMENT OF
PARKS AND RECREATION

ENGINEERING IMPROVEMENTS APPROVED BY:

ENGINEER _____ DATE _____

NOTES:
1. The contour interval within the park is .5', with contours labeled at every 1'. The contour interval within the wetlands is 2'.

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PROJECT NORTH



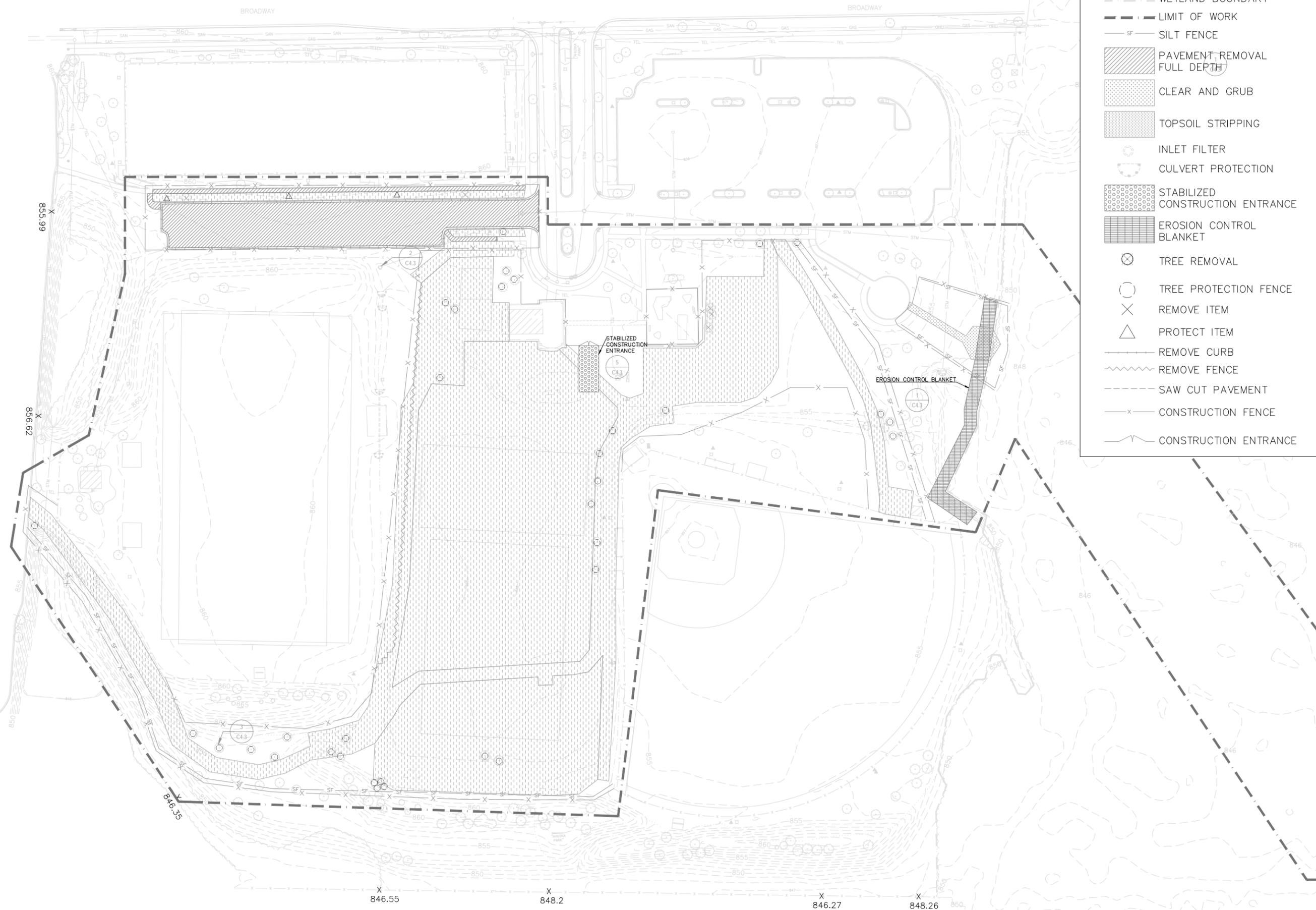
SHEET TITLE
SITE PREPARATION
AND EROSION
CONTROL PLAN

SHEET NUMBER

C2.0

LEGEND

- WETLAND BOUNDARY
- LIMIT OF WORK
- SILT FENCE
- PAVEMENT REMOVAL FULL DEPTH
- CLEAR AND GRUB
- TOPSOIL STRIPPING
- INLET FILTER
- CULVERT PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- EROSION CONTROL BLANKET
- TREE REMOVAL
- TREE PROTECTION FENCE
- REMOVE ITEM
- PROTECT ITEM
- REMOVE CURB
- REMOVE FENCE
- SAW CUT PAVEMENT
- CONSTRUCTION FENCE
- CONSTRUCTION ENTRANCE



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PROJECT NORTH



SHEET TITLE
**GRADING
PLAN**

SHEET NUMBER
C3.0

LEGEND

- LIMIT OF WORK
- 860 MAJOR CONTOUR
- 847 MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING STORM SEWER
- NEW SITE FEATURE
- NEW HYDROLOGIC FEATURE
- BOUNDARIES TO MATCH TO EXISTING



IMPROVEMENTS TO AHUSKA PARK

PROJECT NO. 120616

DRAWINGS PREPARED BY



1415 ENGINEERING DRIVE
MADISON, WI 53706

DRAWINGS PREPARED FOR



CITY OF MONONA
DEPARTMENT OF
PARKS AND RECREATION

ENGINEERING IMPROVEMENTS APPROVED BY:

ENGINEER _____ DATE _____

NOTES:

STUDENT PROJECT DOCUMENTS

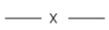
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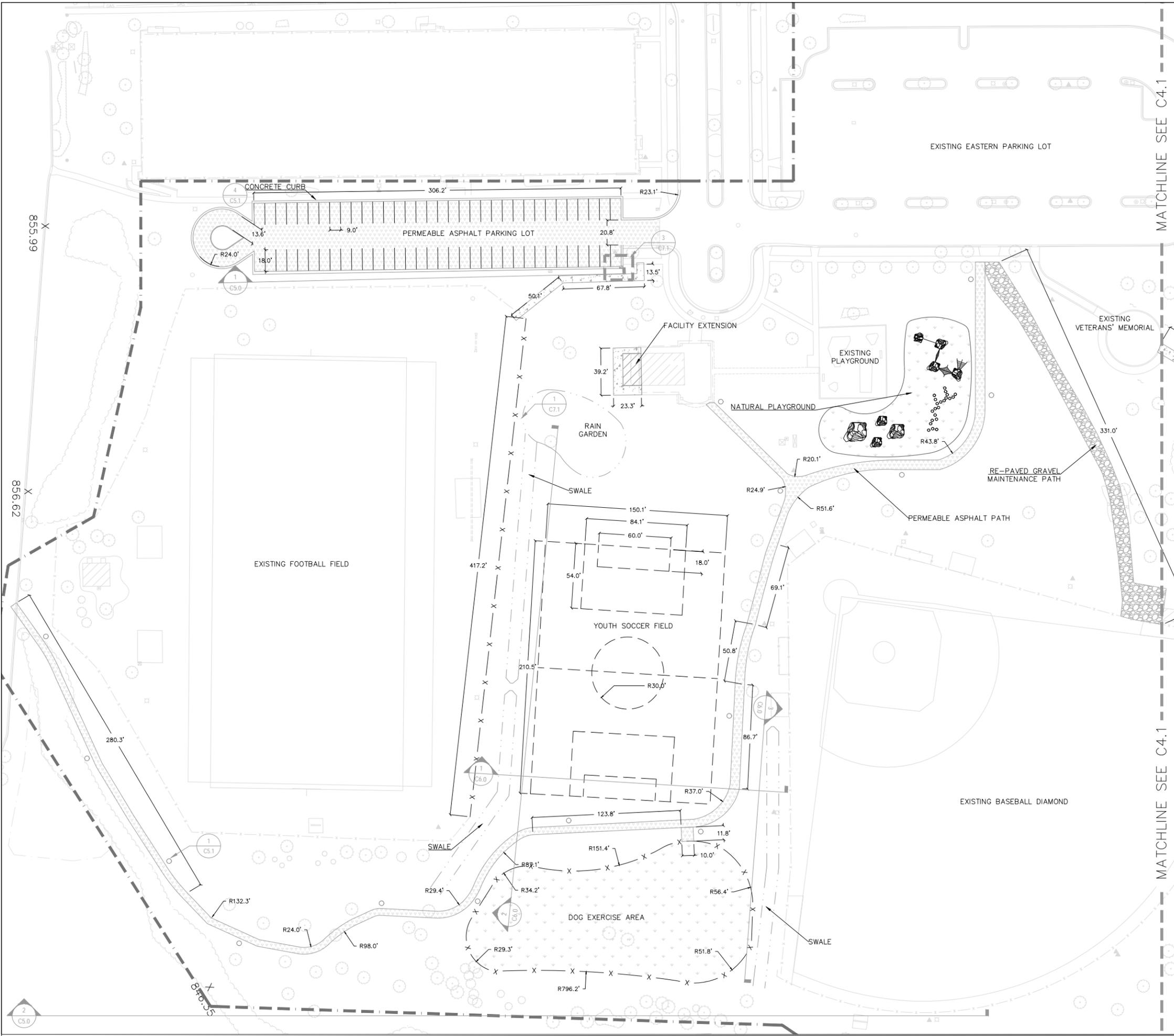


SHEET TITLE
SITE LAYOUT AND
MATERIALS PLAN

SHEET NUMBER
C4.0

LEGEND

-  BOARDWALK MATERIALS (SOUTHERN PINE, TYP.)
-  PERMEABLE ASPHALT PAVEMENT
-  CONCRETE
-  FACILITY EXTENSION
-  NEW PARK AMENITY AREAS
-  GRAVEL
-  CONCRETE CURB
-  FENCE
-  WETLAND BOUNDARY
-  PARKING LOT STRIPING
-  SOCCER FIELD STRIPING
-  LIGHT POLE
-  LIMIT OF WORK



IMPROVEMENTS TO AHUSKA PARK

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DEPARTMENT OF
PARKS AND RECREATION

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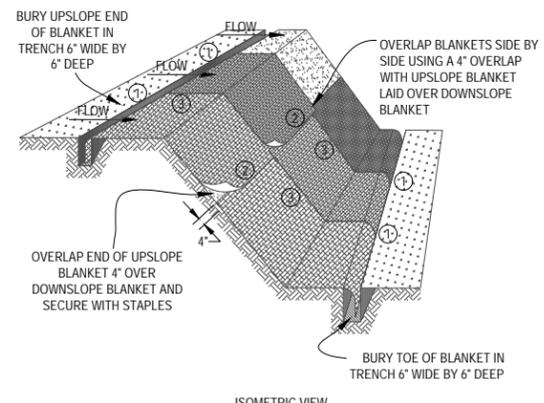
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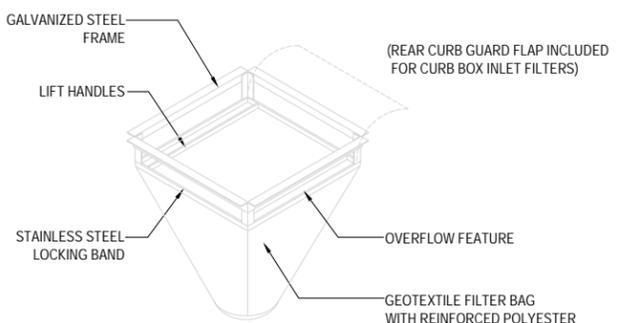
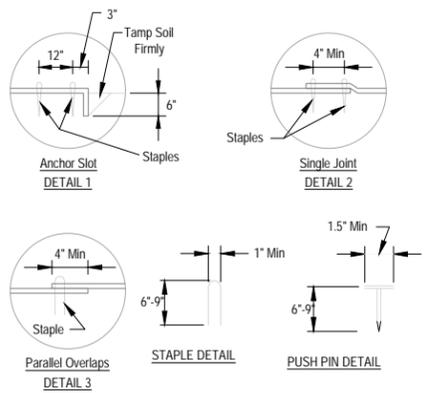
SHEET TITLE
SITE AND MATERIAL DETAILS

SHEET NUMBER

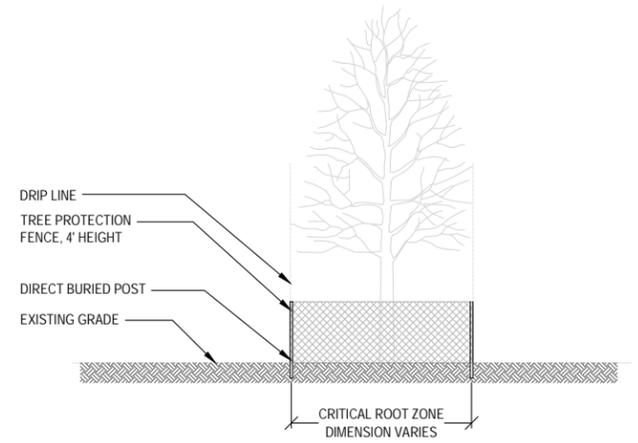
C4.3



- NOTES:
1. Staples shall be placed in a diamond pattern at 2 per s.y. for stiched blankets. Non-stiched shall use 4 staples per s.y. of material. This equates to 200 staples with stiched blanket and 400 staples with non-stiched blanket per 100 s.y. of material.
 2. Staple or push pin lengths shall be selected based on soil type and conditions. (minimum staple length is 6")
 3. Erosion control material shall be placed in contact with the soil over a prepared seedbed.
 4. All anchor slots shall be stapled at approximately 12" intervals.



RECTANGLE INLET FILTER
NOTE:
TEMPORARY INLET SEDIMENT FILTER TO BE INSTALLED ON ALL CATCH BASINS AND STORM INLETS. INLET FILTER TO BE RECTANGLE IPP INLET FILTER AS MANUFACTURED BY INLET & PIPE PROTECTION, INC (847-722-0690) OR APPROVED OTHER. CLEAN FILTER AS NEEDED.



- NOTES:
1. CRITICAL ROOT ZONE: MEASURED AT D.B.H. FOR EACH INCH OF CALIPER, EXTEND ONE FOOT FROM THE TRUNK OF THE TREE.
 2. FENCE MATERIALS: DUPONT CONSTRUCTION FENCING #L-60 OR L-70. SECURE TO STEEL FENCE POSTS PLACED 6' O.C.; INSTALL PRIOR TO SITE DISTURBANCE. REMOVE AFTER OWNERS APPROVAL.

1 EROSION CONTROL BLANKET

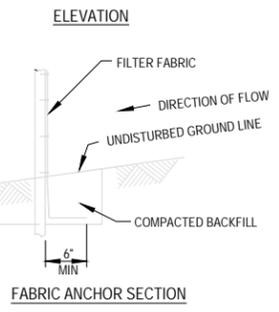
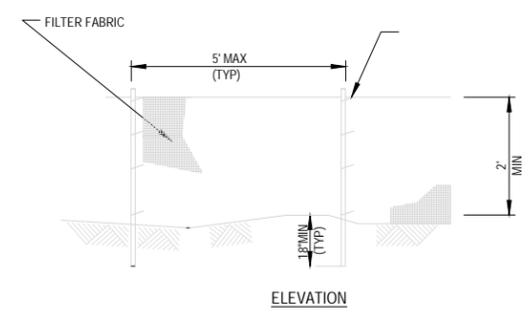
SCALE: NTS

2 INLET FILTER

SCALE: NTS

3 TREE PROTECTION FENCE

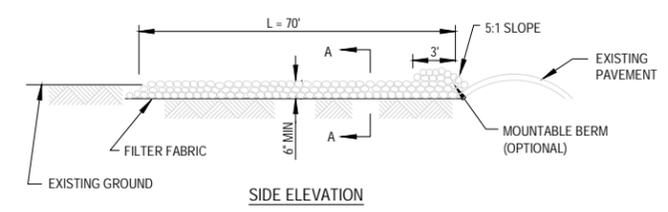
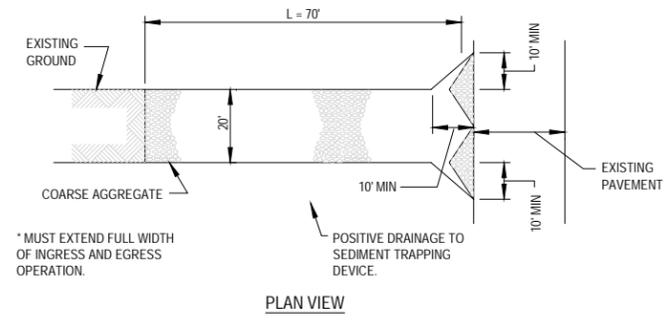
SCALE: NTS



- NOTES:
1. TEMPORARY SEDIMENT FENCE SHALL BE INSTALLED PRIOR TO ANY GRADING WORK. IN THE AREA TO BE PROTECTED. THEY SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REMOVED IN CONJUNCTION WITH THE FINAL GRADING AND SITE STABILIZATION.
 2. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF MATERIAL SPECIFICATION 592 GEOTEXTILE TABLE 1 OR 2, CLASS I WITH EQUIVALENT OPENING SIZE OF AT LEAST 30 FOR NONWOVEN AND 50 FOR WOVEN.
 3. FENCE POSTS SHALL BE EITHER STANDARD STEEL POST OR WOOD POST WITH A MINIMUM CROSS-SECTIONAL AREA OF 3.0 SQ. IN.

4 SILT FENCE

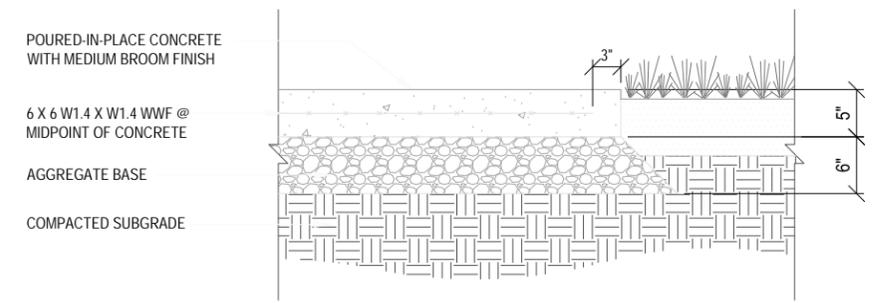
SCALE: NTS



- NOTES:
1. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE I OR CLASS I, II OR IV AND SHALL BE PLACED OVER THE CLEARED AREA PRIOR TO THE PLACING OF ROCK.
 2. ROCK OR RECLAIMED CONCRETE SHALL MEET ONE OF THE FOLLOWING IDOT COARSE AGGREGATE GRADATION, CA-1, CA-2, CA-3 OR CA-4 AND BE PLACED ACCORDING TO CONSTRUCTION SPECIFICATION 25 ROCKFILL USING PLACEMENT METHOD 1 AND CLASS III COMPACTION.
 3. ANY DRAINAGE FACILITIES REQUIRED BECAUSE OF WASHING SHALL BE CONSTRUCTED ACCORDING TO MANUFACTURERS SPECIFICATIONS.
 4. IF WASH RACKS ARE USED THEY SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

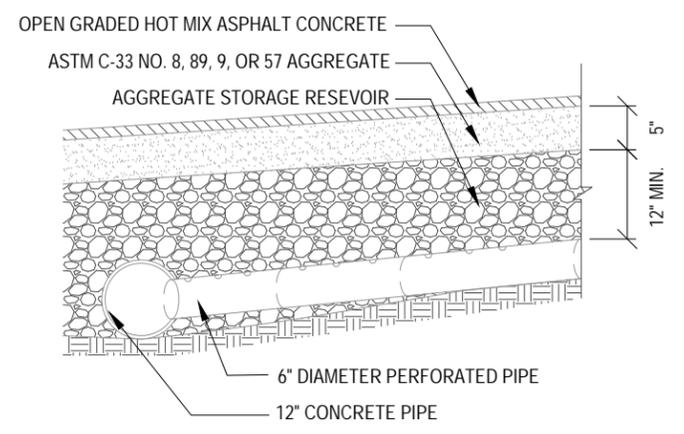
5 STABILIZED CONSTRUCTION ENTRANCE

SCALE: NTS



6 CONCRETE PAVEMENT

SCALE: NTS



7 PERMEABLE ASPHALT PAVEMENT

SCALE: NTS

IMPROVEMENTS TO AHUSKA PARK

PROJECT NO. 120616

DRAWINGS PREPARED BY



1415 ENGINEERING DRIVE
MADISON, WI 53706

DRAWINGS PREPARED FOR



CITY OF MONONA
DEPARTMENT OF
PARKS AND RECREATION

ENGINEERING IMPROVEMENTS APPROVED BY:

ENGINEER _____ DATE _____

NOTES:

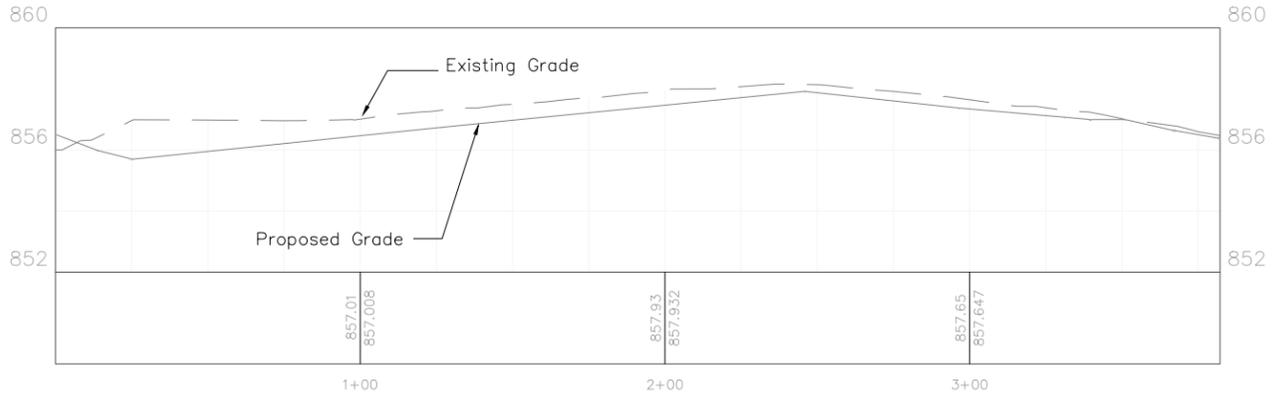
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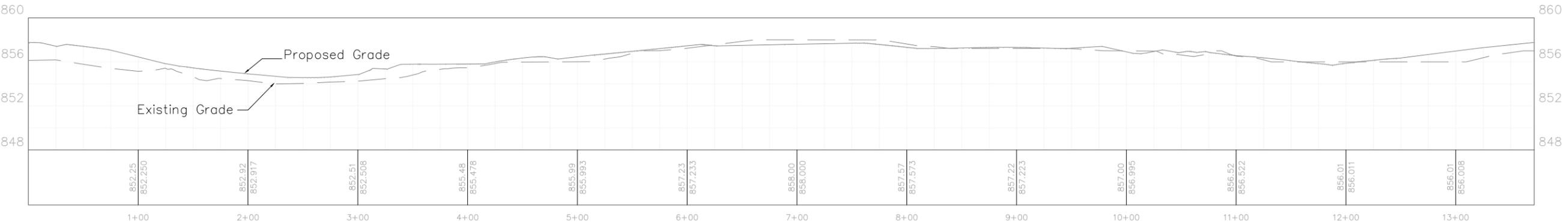
SHEET TITLE
STRUCTURAL PROFILES
AND ELEVATIONS

SHEET NUMBER

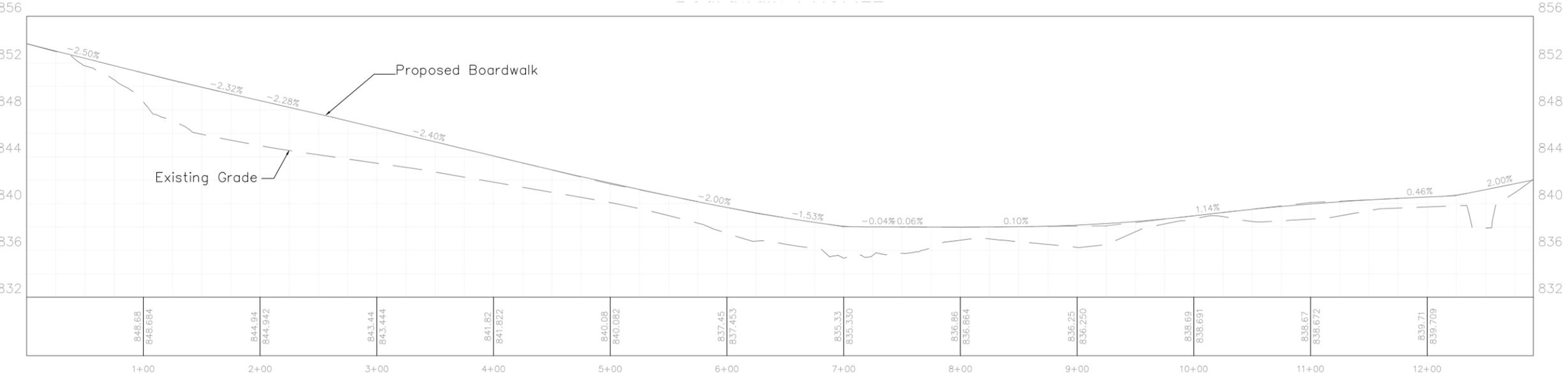
C5.0



1 PARKING LOT CROSS SECTION SCALE: VERT.: 1" = 3', HORIZ.: 1" = 30'



2 PATHWAY PROFILE SCALE: VERT.: 1" = 4.5', HORIZ.: 1" = 50'



3 BOARDWALK PROFILE SCALE: VERT.: 1" = 4.5', HORIZ.: 1" = 50'

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MADISON, WI 53706

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CITY OF MONONA
DEPARTMENT OF
PARKS AND RECREATION

ENGINEERING IMPROVEMENTS APPROVED BY:

ENGINEER _____ DATE _____

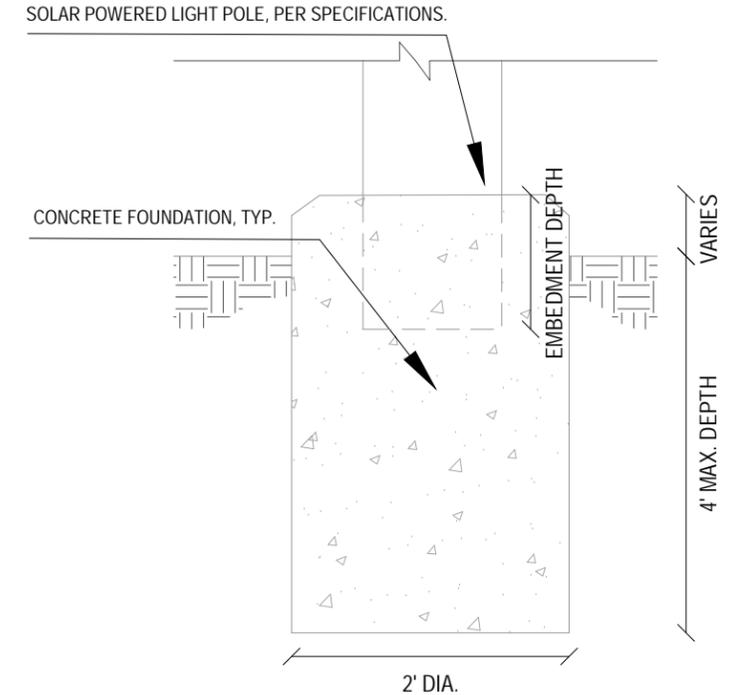
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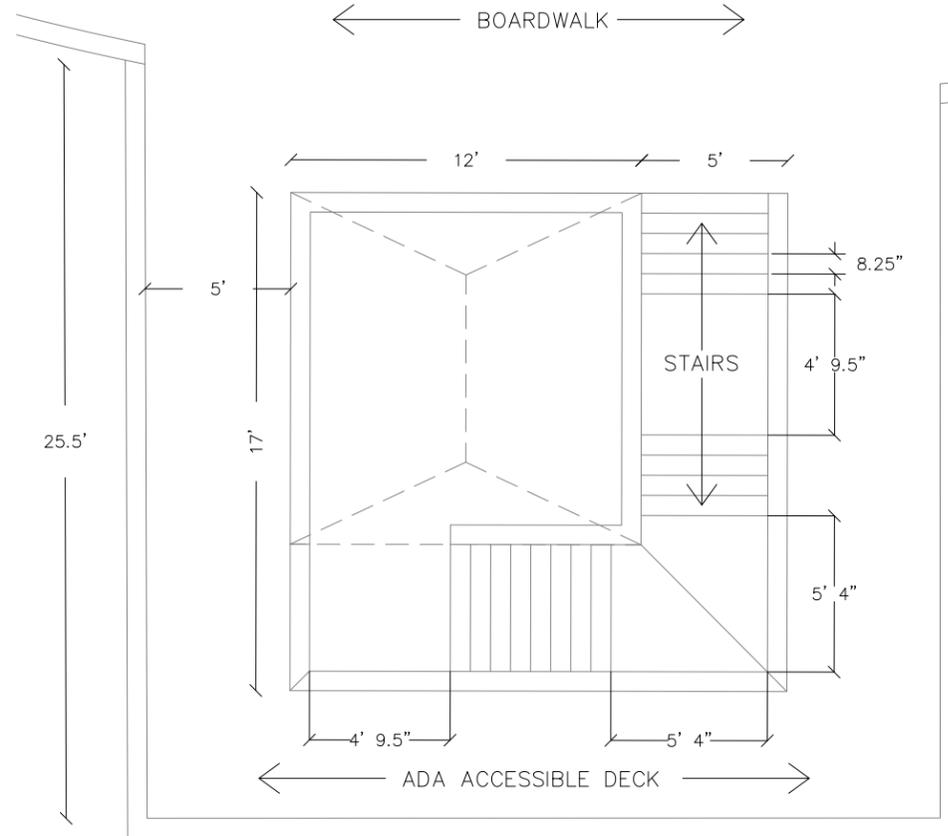
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SHEET TITLE
**STRUCTURAL
DETAILS**

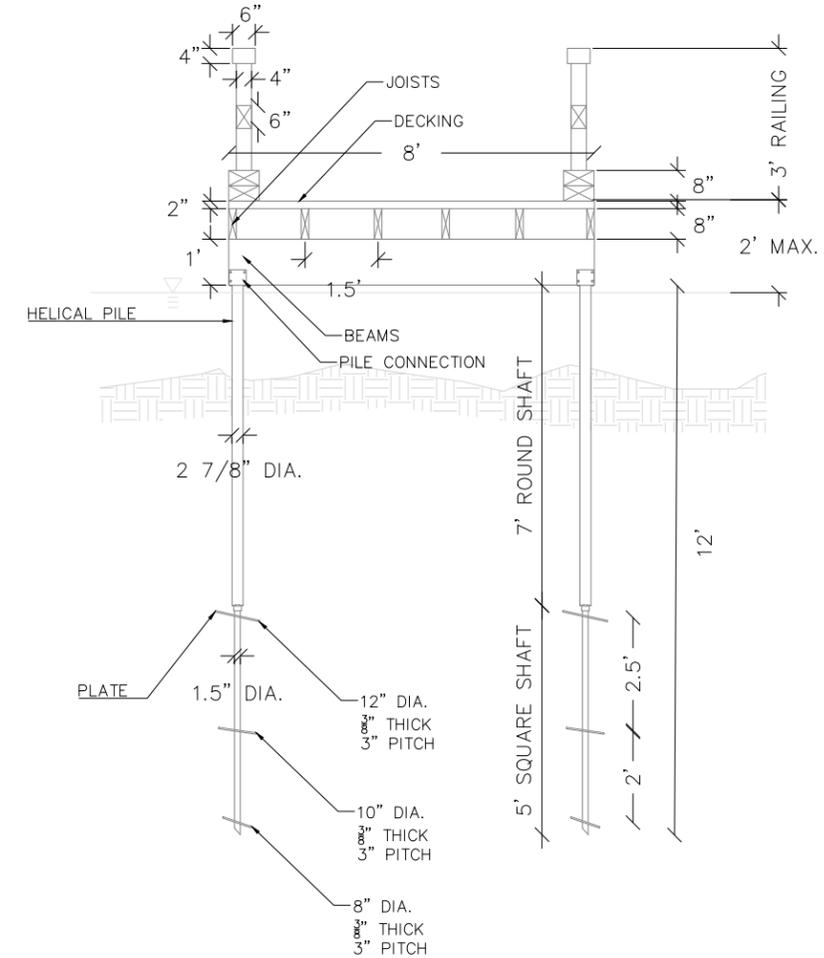
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C5.1



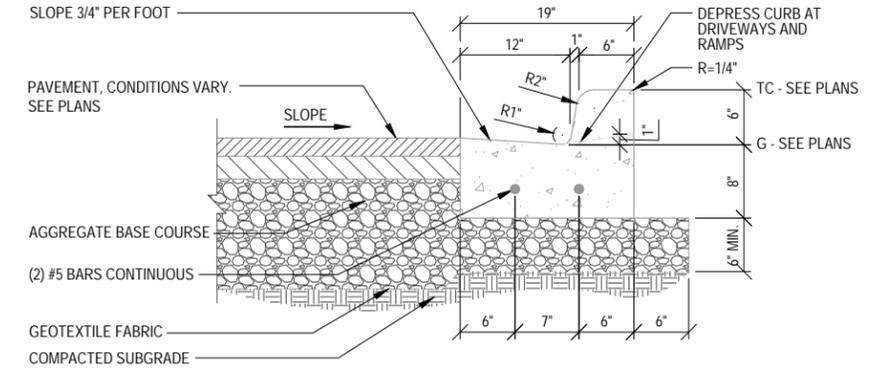
1 LIGHT POLE FOUNDATION SCALE: NTS



2 OBSERVATION DECK AERIAL SCALE: NTS



3 BOARDWALK CROSS SECTION AT HELICAL PILE CONNECTION SCALE: NTS



- NOTES:
- EXPANSION JOINTS WITH PREFORMED 1/2" EXPANSION JOINT MATERIAL SHALL BE PLACED TO FULL DEPTH AT:
 - 5 FT. ON EACH SIDE OF DRAINAGE STRUCTURES
 - MAX. OF 60 FT. INTERVALS
 - TOOLED CONTROL JOINTS SHALL BE CONSTRUCTED AT 15 FT. INTERVALS.
 - ASPHALT SHALL BE HELD 1/4" ABOVE GUTTER GRADE AT LOCATIONS WHERE ASPHALT PAVEMENT MEETS CURB

4 CONCRETE CURB SCALE: NTS

IMPROVEMENTS TO AHUSKA PARK

PROJECT NO. 120616

DRAWINGS PREPARED BY



1415 ENGINEERING DRIVE
MADISON, WI 53706

DRAWINGS PREPARED FOR



CITY OF MONONA
DEPARTMENT OF
PARKS AND RECREATION

ENGINEERING IMPROVEMENTS APPROVED BY:

ENGINEER _____ DATE _____

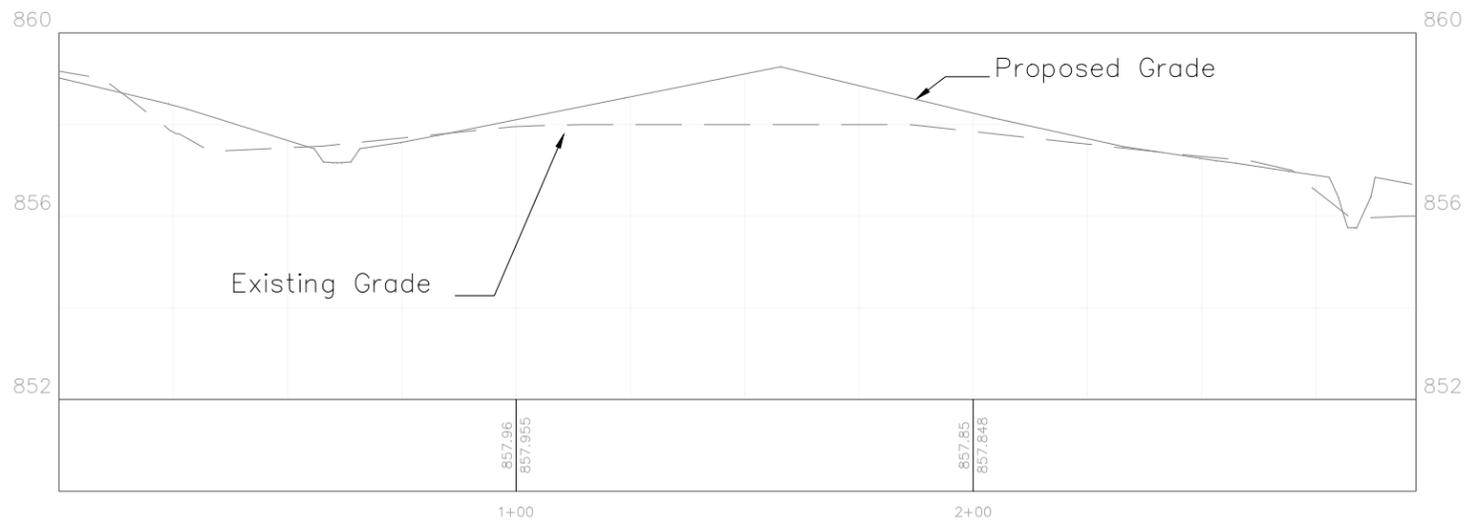
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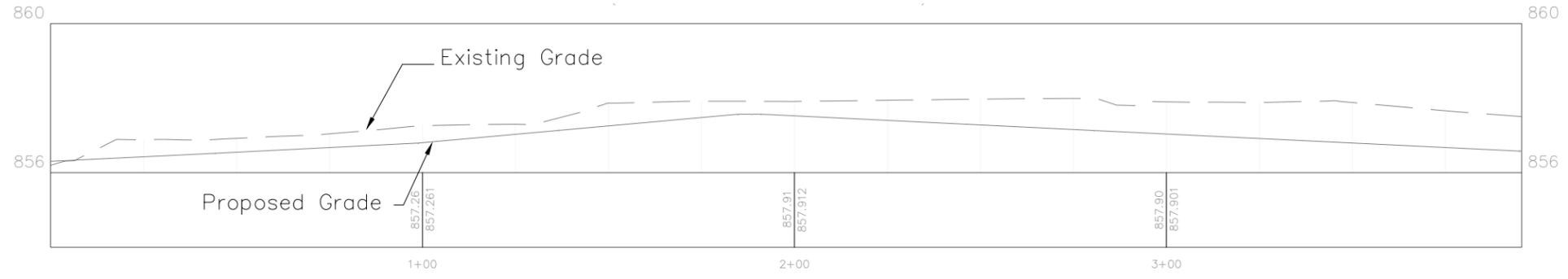
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SHEET TITLE
STORMWATER
MANAGEMENT
PROFILES

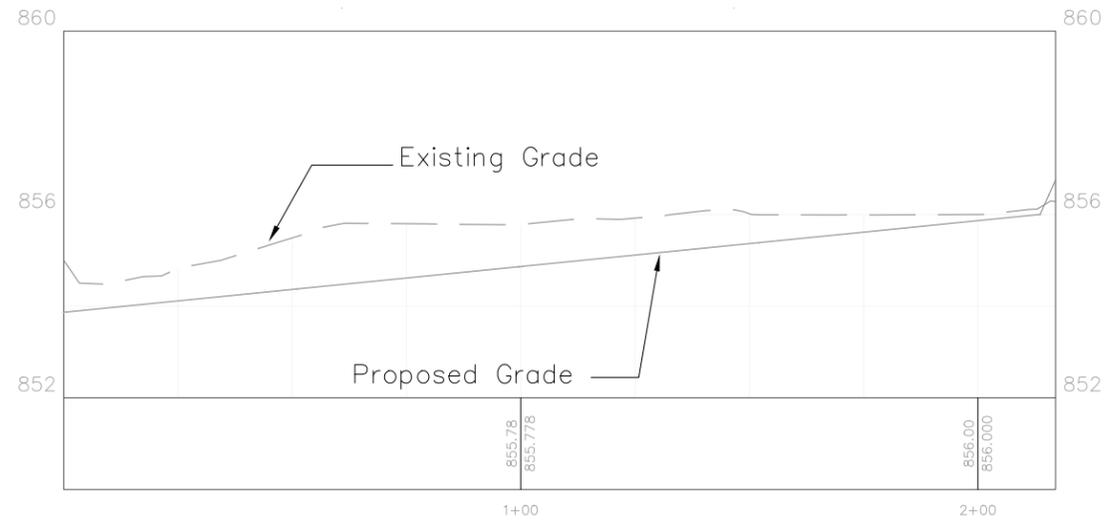
SHEET NUMBER
C6.0



1 SOCCER FIELD CROSS SECTION SCALE: VERT.: 1" = 2', HORIZ.: 1" = 25'



2 SWALE WEST OF SOCCER FIELD PROFILE SCALE: VERT.: 1" = 2', HORIZ.: 1" = 25'



3 SWALE EAST OF SOCCER FIELD PROFILE SCALE: VERT.: 1" = 2', HORIZ.: 1" = 25'

IMPROVEMENTS TO AHUSKA PARK

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DRAWINGS PREPARED BY



1415 ENGINEERING DRIVE
MADISON, WI 53706

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ENGINEERING IMPROVEMENTS APPROVED BY:

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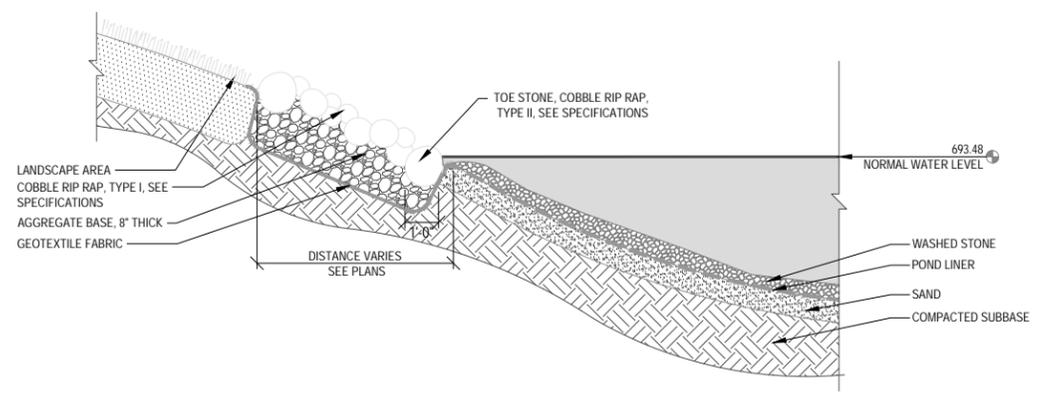
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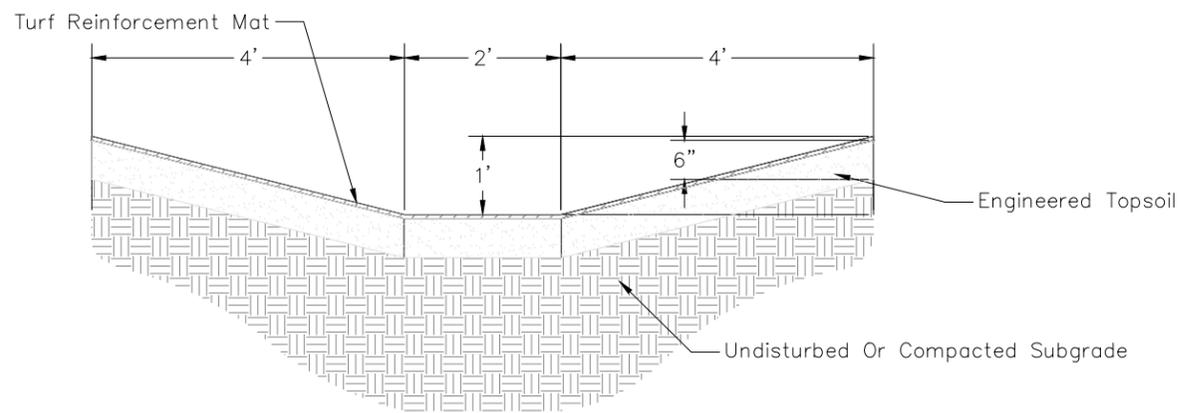
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SHEET TITLE
STORMWATER
MANAGEMENT DETAILS

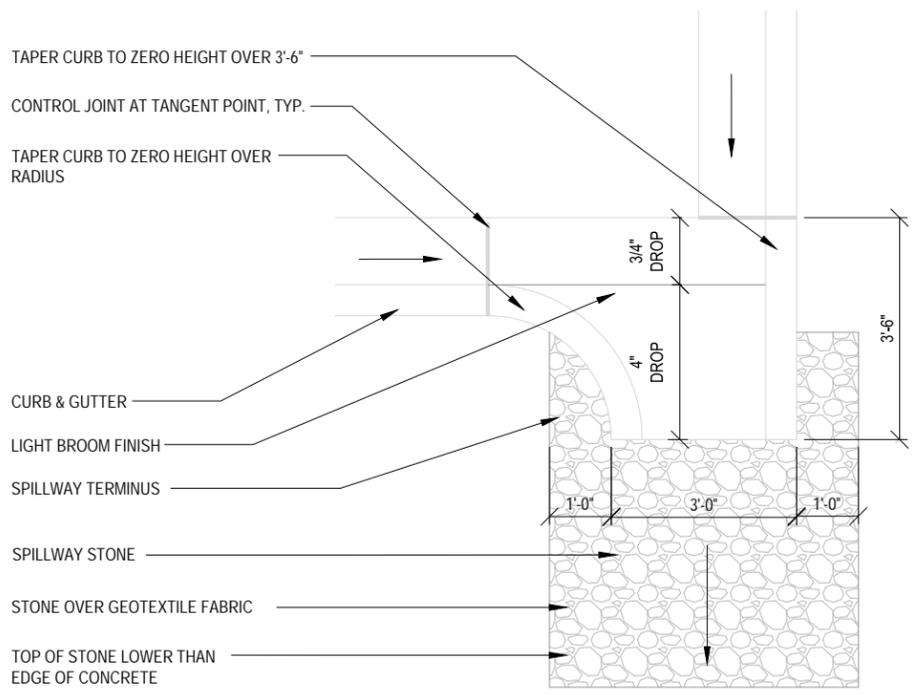
SHEET NUMBER
C6.1



1 RAIN GARDEN POND EDGE SCALE: NTS



2 SWALE GEOMETRY SCALE: NTS



3 SPILLWAY TO INLET SCALE: NTS

IMPROVEMENTS TO AHUSKA PARK

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PROJECT NORTH

SHEET TITLE
LANDSCAPE PLAN

SHEET NUMBER

L1.0

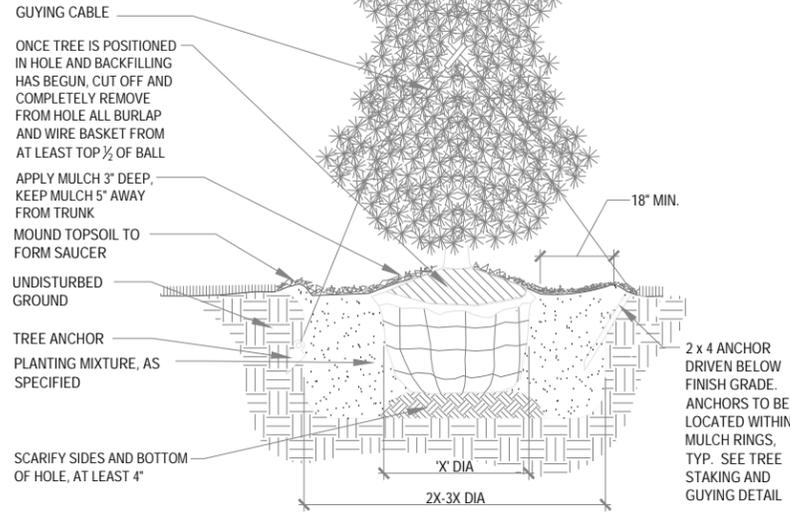
LEGEND

- EXISTING TREE
- EVERGREEN TREE
- DECIDUOUS SHADE TREE
- SHRUBS
- SOD
- DETENTION POND SEED MIX
- SWALE AND RAIN GARDEN BOUNDARIES
- LIMIT OF WORK



855.99 X
856.62 X
846.55 X
848.2 X
846.27 X
848.26 X

NOTES:
 PRIOR TO DIGGING EACH PLANTING HOLE, REMOVE SOIL FROM THE TOP OF THE ROOTBALL AND EXPOSE ROOT COLLAR. DIG HOLE NO DEEPER THAN DISTANCE FROM ROOT COLLAR TO BOTTOM OF ROOTBALL. TREES PLANTED WITH ROOT COLLAR NOT VISIBLE AND/OR BELOW GRADE WILL BE REJECTED.

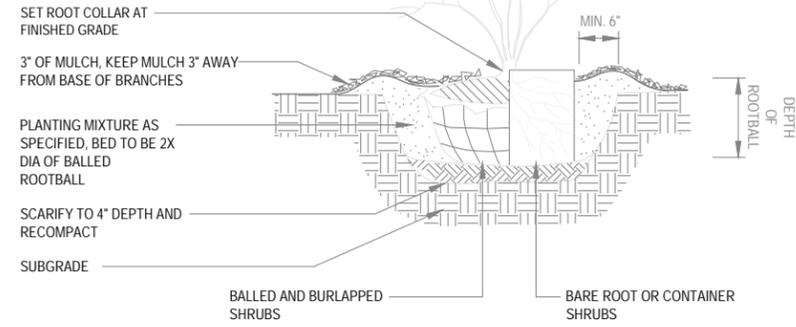


1 CONIFEROUS EVERGREEN TREE

SCALE: NTS

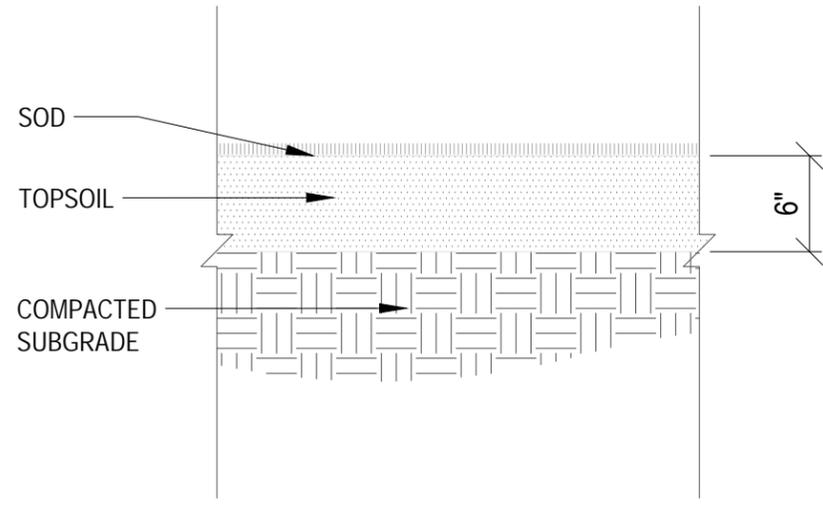
NOTES:
 PRUNE AS SPECIFIED

REMOVE BURLAP FROM TOP 1/2 OF BALL, OR, WITH CONTAINER PLANTS, REMOVE POTS AND SPLIT BALLS AS SPECIFIED.



2 SHRUBS

SCALE: NTS



3 SOD

SCALE: NTS

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PROJECT NORTH

SHEET TITLE

LANDSCAPE
 DETAILS

SHEET NUMBER

L1.1

Turf Management at Ahuska Park

Soil Science 332: Turfgrass Nutrient and Water Management
University of Wisconsin-Madison

December 2016

Benjamin Henke, James Martell, Zach Meyer, Logan Mohr, Durrell Naquin, Ron Townsend
Course Instructor: Doug Soldat, djsoldat@wisc.edu, 608-263-3631

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Executive Summary

Ahuska Park in Monona, WI includes six acres of athletic fields including a baseball diamond, a soccer pitch, and a football field. Our goal is to help the City of Monona to improve the playing conditions at the park, maintain safe playing surfaces, and ensure that the practices employed are safe to the public, and the environment (and in compliance with regulations) while staying within the Monona Parks and Recreation Department budget. In the following report, we evaluate the current maintenance practices, and provided guidance on future nutrient management decisions, irrigation practices and infrastructure, and pest management, and pest management at Ahuska Park. Next, we propose science-based recommendations on how each of these areas can improve and provide justification of why. Below is a brief summary of the opportunities we have identified.

- Maintenance Practices
 - General Observations
 - Overall current management is good
 - Poor soil texture (silty clay loam) is creating management difficulties
 - Recommendations
 - Topdress football field with sand instead of compost
 - Mow with a lightweight mower, dedicated to the site. Develop standards for operating mowers and other maintenance vehicles during wet conditions.
 - Maintain a consistent mowing height and rotate blades frequently to keep them sharp.
 - Broadcast perennial ryegrass during times of heavy use.
 - Add a plant growth regulator to paint to reduce number of paint applications.
 - Change \$250 “painting” charge to “maintenance” charge
- Fertilization Program
 - Current Observations
 - Nitrogen deficient turfgrass
 - Football field unable to recover as quickly as desired
 - Recommendations
 - Plan 1: Increase nitrogen, select less expensive products
 - 4.5 Lbs N / 1000ft² / per year (all athletic fields)
 - Use of feed grade urea and coated urea particles
 - Total cost \$1,617
 - Plan 2: Increase nitrogen, select least expensive products
 - 4.5 Lbs N / 1000ft² / per year (all athletic fields)
 - Feed grade urea plan
 - Total cost \$621
- Irrigation Practices
 - Current problems
 - Time consuming (8 hours to water one field and takes 2 people)
 - Lacks uniform distribution of water (CU = 57% meaning need to irrigate twice as much to achieve a uniform distribution)
 - Proposed solutions
 - Install a drip irrigation system
 - Level Spreader with Sand Cap System and Drip Irrigation
 - Total cost \$269,160.50 to \$308,160
 - Sand Cap System with Drip Irrigation
 - Total Cost \$59,160 to \$99,160
 - Drip Irrigation Only

- Total Cost \$23,160

Maintenance Report

Evaluation of the current conditions and the maintenance practices at Ahuska Park, have led us to recommend some changes to meet the stated goals. A discussion of current practices and our findings will hopefully be helpful in understanding our recommendations and implementing these changes.

Soils Report

Soil plays an important role in all aspects of our overall plan for Ahuska Park. Quality soil reduces maintenance headaches, reduces runoff of stormwater and pollutants, and makes for a better playing surface. After pulling several deep cores from the fields in the fall of 2016 (Figure 1), we found the soil texture to be primarily silty clay loam (28% Clay, 56% Silt, and 16% Sand). This soil texture is compacted easily because of the size of the particles and the pore spaces associated with the soil. Pore spaces help with the infiltration of water and oxygen to the turf roots. The advantage of having a high silt/clay soil is that it is very stable when dry, however the disadvantage is that there will be very low water infiltration rates. Saturated field conditions will decrease soil stability. The football field has a 12" layer of the silty clay loam on top of a sand layer (depth of sand unknown). We surveyed the football field with a device called a cone penetrometer and found that the soil is not compacted (Figure 2), indicating excellent traffic and soil management, despite having a soil texture predisposed to compaction.



Figure 1. Soil cores taken from the football field at Ahuska Park. Shows 12" Silty Clay Loam topsoil over the original sand field.

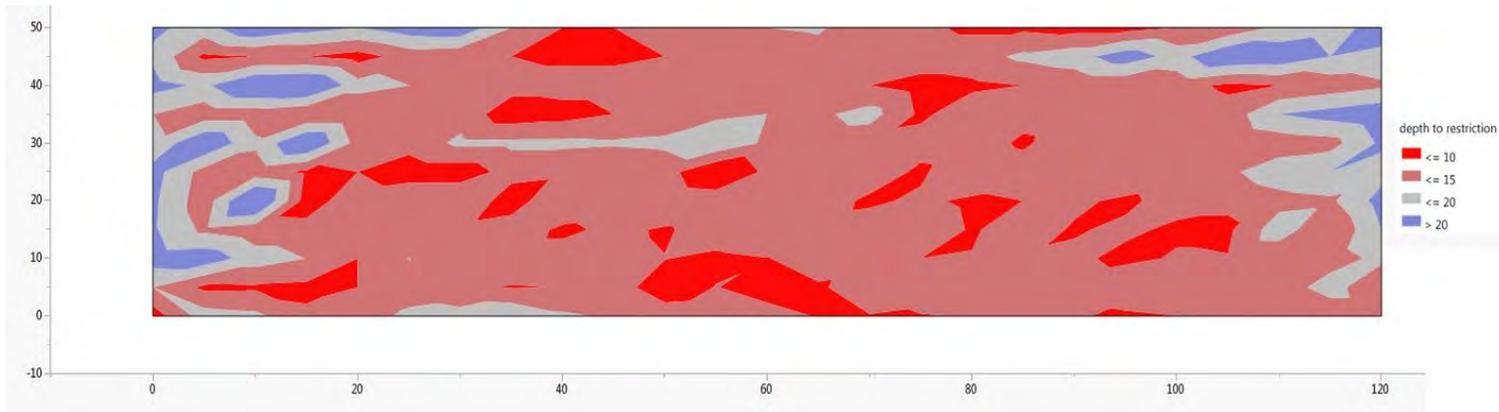


Figure 2. Map of soil compaction using a penetrometer.

Athletic Field Usage

The usage rates of the three athletic fields vary throughout the year. We discovered that the soccer field has the highest traffic/usage of the three fields. The high usage can be attributed to the many soccer games and practices throughout the year as well as football and baseball teams using the soccer field as a warm-up area. The football field hosts youth and adult football games throughout the fall and spring. In the spring there is sometimes a need to move the soccer games to the football field because the soccer field is usually too wet to play. Mr. Anderson had mentioned that the football field typically gets about 35-40 events per year. The baseball field is an area where usage/traffic does not play a major role in the quality of the turf as baseball is a relatively low impact sport. However, as the City of Monona grows, demand for the fields is expected to increase the number of events and add stress to the turf and soil at the Park.

Discussion of Current Practices

Mowing is a form of stress that is often neglected. At Ahuska Park, mowing is currently being done 1 to 2 times a week as dictated by growth, weather, and available labor. The primary mower used on the parks around Monona is a TORO Groundsmaster 4000-D, which is a wide area mower that has a 11 foot width of cut. This mower weighs nearly 4,000 lbs., which translates to 12-18 psi. The turf is mowed at a height of 2 ½, which is ideal for this situation, the mower blades are typically sharpened once a month. However, it can be difficult for Mr. Anderson to get needed maintenance on his mowers as there is only one mechanic for the parks department. The football field occasionally is mowed by a volunteer with a smaller mower with a 52" deck. The mowing height is lower with the mower, which likely adds stress to the turf. We recommend that the mowing height be raised to match the normal height of cut for improved turf quality.

Maintenance practices, including mowing, often represent an important source of traffic and can create mechanical damage to the turf and soil in certain conditions. For example, some rutting was observed this fall (which was extremely wet) on the soccer and baseball fields, we also observed some other ruts that look like they were made by a larger vehicle. Performing maintenance when soil conditions are wet is often necessary but leads to compaction of the soil and rutting. Having protocol in place for dealing with wet soils may be beneficial to field conditions. In addition, if mower blades are dull over the season with use, by fall leaf damage evident as a result of dull blades. This can lead to increased water loss, higher disease pressure, and decline in aesthetics and function. (Steinegger, D. H.; Sherman, R. C.; Riordan, T. P.; Kinbacher, E. J. 1983. *Agronomy Journal*. May/June. 75(3): p. 479-480.)

Cultivation and Topdressing:

Hollow tine cultivation is performed at least once a year with the goal of performing it more often as time and budget allows. After cultivation the fields are being topdressed with Purple Cow compost at a quantities of 50 yards on the football field, 40 yards on the baseball field, and 20-30 yards on the soccer field. Collectively the topdressing uses 110 yards of compost annually for all three fields. This is a major expense on the parks budget, costing \$3,600 per application. Based on our observations of the soil cores, we feel this process has yielded little beneficial results for the soil texture. The goal of the compost topdressing program is to improve the root zone by improving the soil near the surface. However, the football fields do not show a visible accumulation of organic matter from the Purple Cow topdressing (Figure 1).

Overseeding and Seed Selection:

Currently the fields are seeded with a Kentucky bluegrass, perennial ryegrass seed mixture. 50/50 mix on the baseball outfield and soccer fields, being applied at a rate of 4lbs. per 1000 sq.ft., this application costs \$370 annually. An 80/20 (KBG/PR) mixture is used on the football fields as well as the infield of the baseball field, each applied at a rate of 3lbs. per 1000 sq.ft. The cost of this application is \$879 annually. Both are applied with a slit seeder that is rented form FS for \$140. The soccer and baseball fields are overseeded in fall with the football being seeded in spring, the timing of the seeding is determined by usage of the fields and the weather. The total cost of the current annually seed application is \$1,389.00 per season.

Recommendations and Justification

Usage Recommendations:

In order to make the fields sustainable for the future we have some suggestions for field use restrictions. We recommend that you continue prohibiting play when overly wet, drought stressed, etc. There appears to be an opportunity to spread traffic around the field by moving soccer goals occasionally, and creating a designated area other than the three fields where teams can warm up to minimize excess traffic (Figure 3). It is also important to continue with the practice of restricting unofficial play from the athletic fields as much as possible. We also recommend establishment of paths/routes for heavier equipment and trucks out to the fields for maintenance work. In wet conditions, maintenance vehicles should be restricted to these paths to minimize potential damage to these areas and off of any areas of play. Under dry conditions, it may be permissible to drive off paths.



Figure 3. Shows rotation of soccer field and warm up area to manage traffic.

Mowing:

No other maintenance practice is more important than mowing. Improper mowing can induce turf stress and lead to decreased density, more weeds, and drought because of root system damage. We feel the current height of 2 ½ inches is optimum for the fields and general areas at Ahuska Park. Frequency of mowing is another important part of the management plan, it is imperative to adjust the frequency based on the rate of turf growth. When mowing, it is important to never take off more than ⅓ of the grass blade per cut. Optimum temperature and moisture conditions often result in turf that needs to be mowed more than once a week – which is logistically challenging. However, research out of UW-Madison and University of Nebraska have shown that grasses with more than 50% of the grass blade removed, the plant enters a stress state and grows even more rapidly which can lead to a thinning stand of turf if mowing is not adjusted to keep up with growth **(Soldat, D. 2015. *The Grass Roots*. May/June. 44(3): p. 26-27).**

In addition to following the 1/3 rule, having sharp mower blades all season long is expected to increase turf health and density. We recommend that the Parks and Recreation Department have another set of sharpened blades that he can be quickly changed out when leaf fraying is observed (Figure 3).



Figure 3. Shows torn leaf blade as result of dull mower blades.

It is likely that mower blades will need to be sharpened several times a year for optimum performance. In addition to harming the turf quality, dull blades also put more stress on the mowing equipment as it requires greater power (and more fuel) to turn the blades. A possible solution to making sure that the Monona Parks Department has blades that are sharp enough to make a clean cut is to have an extra set of blades that can easily be interchanged. The quote we received from Reinders for a new set of blades which would cost \$129.50 for 7 blades on the TORO Groundsmaster 4000-D. We understand that there is a lot of grass that is maintained throughout the entire city of Monona, however one suggestion to ensure an optimal cut on the athletic fields is to designate one mower to mow the fields. By doing this we hope to eliminate potential sticks and other material that could disrupt the sharpness of the mowing blades. As we mentioned earlier the 4000-D model applies 12-18 pounds per square inch to the soil surface, and could potentially cause problems on the turf when conditions are as wet as this fall was. The use of John Deere out-front mower could eliminate the damage caused to the field when soil moisture is high, simply because these mowers are almost 2,000 lbs lighter than the TORO, and would exert 8-10psi. to the playing surface.

Cultivation and Topdressing:

Core cultivation is a critical process that can alleviate soil surface compaction and improves the water infiltration through the soil. The fields at Ahuska park have at least 12 inches silty clay loam, which has naturally poor drainage and is subject to compaction. The fields have been topdressed with Purple Cow compost after aeration, core sampling observations were not able to identify any layer or compost accumulation in the cores. However, our evaluation of the fields showed the silty clay loam soil to be minimally compacted, a testament to the quality of the current cultivation practices. We recommend the addition of deep tine aeration, to alleviate any formation of hardpan at a three inch depth by current cultivation practices. The core cultivation or deep tine aeration should be followed by a medium to coarse sand topdressing at a depth of 0.25 inches in the spring and fall in place of the current compost topdressing practices. A drag mat should be used to smooth out the surface and help incorporate the sand into the aeration holes. Additional core cultivation should be done throughout the season, as play and conditions allow ideally, fields while under heavy use should be core aerated and drug every three to four weeks, or as often as time and budget allows. The cores should be dragged with a drag mat to break up and incorporate the cores into the field. We feel that the sand topdressing program coupled with the current core cultivation practices will continue to make soil compaction less of an issue over a three year period, as well as improve drainage on the fields, increase the availability of water to the turf, and increase the number of games the field can handle. While sand topdressing may be a beneficial practice on all of the fields, we are only recommending it on the football field for now because of the cost. However, discontinuing the compost applications will provide a \$3,600 savings in the budget, this will offset some of the suggested sand topdressing program that will cost an estimated \$4,250. This program should be employed for three years, at which point the field's soil properties and management practices should be reassessed and adjusted if necessary.

Baseball field:

Aerate with deep tine aerator or core cultivation, spring and fall. Core cultivate once in June or after spring baseball and drag cores.

Soccer field:

Aerate with deep tine aerator or core cultivation, spring and fall. Core cultivate in June, and August, and drag cores.

Football field:

Aerate with deep tine aerator or core cultivation, spring and late fall. Topdress with 0.25 inches of sand. Core cultivate, in early August, mid September, and early October, and drag cores.

Overseeding and Seed Selection:

The Premium Athletic Field Gold, and Grand Slam Seed mixes currently being used at Ahuska Park are providing the playing surfaces on the baseball and football fields with a healthy and dense stand of turf. Applications of seed are done with the use of a slit seeder. The soccer field sees the most traffic and is subject to water runoff from the surrounding fields creating wet conditions and in some cases standing water. This causes some excess wear on the soccer field, which may benefit from the use of the 80/20 Premium Athletic Field Gold seed mix to establish a higher percentage of Kentucky bluegrass in the field. Kentucky bluegrass is a rhizomatous grass, it's spreading characteristics may help the field repair itself to some extent. This would increase the amount of premium seed needed by about 115 lbs., and additional cost of \$337.00. Rotating practice and warm-up off one side of the soccer field at a time, or limiting warm up to behind the soccer field may help with seed establishment, and give a window to aerate as well. Overall the seed mixture and seeding rates of 3lbs. per 1000 sq.ft. for the 80/20, and 4lbs. per 1000 sq.ft. for the 50/50 mix are good for the playing surfaces and we recommend continued use. Broadcast applications of 100% perennial ryegrass blends can be

used if the fields are starting to show significant wear, applications of this should be done at a rate of around 5lbs. per 1000 sq.ft. and applied prior to use in order to help obtain good seed to soil contact.

Field Painting:

Field painting represents a significant portion of the budget at Ahuska Park, lining the field costs an estimated \$120, per application not including labor. We recommend mixing a plant growth regulator, such as Primo Maxx with your paint, at a rate of 1oz. per gallon of paint applied. The growth regulator will slow the growth of the turf under the paint, and will dramatically increase the longevity of the lines, and thus reducing the frequency that the fields have to be painted, and saving paint and labor. If someone on staff is able to obtain a pesticide applicators license, mixing Primo Maxx, or similar product, following label directions may provide a worthwhile cost savings, and reduce the amount of man hours spent painting the field per year. The cost of Primo Maxx is \$304 per gallon or \$2.35 per oz. A generic product will cost \$220 per gallon or \$1.72 per ounce. Using 5 ounces per pail of paint will only increase the cost of paint from \$40.00 per 5 gallon pail to \$51.75 per pail using Primo Maxx. However, this practice may double the life of the paint, reducing product and labor costs.

Nutrient Management Report

The state of Wisconsin currently has guidelines and laws that require all nutrient applications be recorded and follow regulations in accordance to the NR 151, which states in chapter 13 “The application of lawn and garden fertilizers on municipally controlled properties, with pervious surface over 5 acres each, shall be done in accordance with a site specific nutrient application schedule based on appropriate soil tests. The nutrient application schedule shall be designed to maintain the optimal health of the lawn or garden vegetation.” Ahuska Park totals 6 acres as mentioned before and thereby needs to have a nutrient schedule based on soil test.

Our report below will focus on the current nutrient application schedule as compared to four other options (all compliant) that have different pros and cons, but will in general meet the agronomic, economic, and environmental goals of Ahuska Park. The nutrient management plan is included as an appendix to this report.

Background

The soccer field has the highest traffic out of the three fields followed by the football field and the baseball field. The soccer field also appeared to have the worst turf quality due to the high use of the field and lack of drainage on the field. The football field predominantly down the middle of the field had a thinner stand of turf. The general wear pattern of a football field is between the hash marks in the middle of the field. The majority of the traffic on the field is concentrated to this area and requires more inputs in order to provide acceptable turf quality. The baseball field appears to have good turf quality except for a few areas in the infield where the majority of wear occurs. Nitrogen requirements are partially determined by use and wear patterns. Taking this into account a fertilizer plan can be developed to address these issues and provide a consistent stand of turf across an entire athletic field.

Currently the fertilization of the athletic fields is done by an outside contractor, Conserv FS based in Woodstock, IL. The plan from Conserv FS consisted of a total of 3.66 pounds of nitrogen per year applied to the three athletic fields and is detailed out in the table below. We found the current plan to be in compliance with the NR-151 technical standard guidelines, although a written plan did not exist.

Month	Fertilizer	Lbs N / 1000ft²	Cost
May/June	30-0-5 50%XRT	1	\$535
Early August	30-0-5 50% XRT	1	\$468
September	25-0-5 33% XRT	1	\$535
October	28-0-6 All Mineral	0.66	\$396
Total		3.66	\$1934

Table 1. Current nutrient application schedule at Ahuska Park in Monona WI.

Soil Test Results

Soil testing was done by Conserv FS this year on the athletic fields at Ahuska Park and the data from these chemical tests were made available to the students in Soil Science 332. However, the soil samples were analyzed using the Bray extractant which is less desirable than the Mehlich-3 for making fertilizer recommendations to turfgrass areas. Therefore, Mehlich-3 soil testing was done by the class to have the most up to date soil nutrient analysis for all athletic fields at Ahuska Park. Table 2 shows the results of the Mehlich-3 soil tests taken on October 4, 2016. The samples analyzed by Rock River Laboratory Inc.

Table 2. Soil testing results from athletic fields at Ahuska Park in Monona WI.

Field	Soil pH	Organic Matter %	Mehlich-3 Phosphorus (ppm)	Mehlich-3 Potassium (ppm)	Mehlich-3 Calcium (ppm)	Mehlich-3 Magnesium (ppm)
Football	7.0	4.4	55	139	2654	731
Baseball	7.6	4.8	38	119	4895	751
Soccer	7.6	7.9	39	117	6129	663

For the purpose of this report and the technical standard report applications of nutrients will be based on the Minimum Levels for Sustainable Nutrition Soil Guidelines (MLSN) developed by PACE Turf. Using these levels we see that our soils on all athletic fields are above these levels for all nutrients in question, including phosphorus. These results suggest that additions of potassium, phosphorus, calcium, and magnesium are unnecessary. Unfortunately, soils tests are unable to predict nitrogen availability from the soil. Therefore nitrogen recommendations are based on other factors including grass species, soil type and condition, traffic and use patterns, and climate and edaphic factors.

Future

Based on quotes we have received from various companies in the area we have found that Conserv FS provides the lowest agronomic plan based on soil test results. Our recommendations will include using both their fertilizer products and applicators. There are two nutrient plans we are recommending for Ahuska Park. Based on our observations and research increasing the total amount of nitrogen applied to each field is the focal point of each plan. The lack of nitrogen on the athletic fields is the biggest issue on these fields and in order to address this problem more nitrogen is needed.

Fertilizer Plans and Proposals

Plan 1

Plan 1 is a recommendation that is increasing the total amount of nitrogen applied to all athletic fields. The nutrient management plan will continue to us Conserv FS as an outside contractor. The increase of nitrogen applications and overall amount will help recovery on the playing surfaces and potentially the reduction of the disease rust that was prevalent on the football field in particular. The result of the soil test shows that there is no need for additional phosphorus applications to the field given the Mehlich 3 guidelines. To supplement an additional application of nitrogen without increasing cost greatly using feed grade urea. A fifty pound bag of urea only cost \$11.50, this is extremely cost effective while providing adequate fertility. The table below comprises the fertilizers used and when they are to be applied as well the total cost of products and

applications. Applications of fertilizer should not be made with turf has gone dormant in order to reduce the risk of runoff and leaching.

Table 3. Fertilizer plan for all fields provided by FS Conserve including application cost \$1,617 total

Athletic Fields	Mid May	Mid June	Early Aug.	Sept.	Oct.	Total N
Football	30-0-5 50%XRT 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	30-0-5 50%XRT 1 lbs /1000ft ²	25-0-5 33%XRT 1 lbs /1000ft ²	46-0-0 Urea 0.5 lbs /1000ft ²	4.5 lbs /1000ft²
Baseball	30-0-5 50%XRT 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	30-0-5 50%XRT 1 lbs /1000ft ²	25-0-5 33%XRT 1 lbs /1000ft ²	46-0-0 Urea 0.5 lbs /1000ft ²	4.5 lbs /1000ft²
Soccer	30-0-5 50%XRT 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	30-0-5 50%XRT 1 lbs /1000ft ²	25-0-5 33%XRT 1 lbs /1000ft ²	46-0-0 Urea 0.5 lbs /1000ft ²	4.5 lbs /1000ft²

Plan 2

Plan 2 is a recommendation that uses only a urea based nitrogen source. By using only this fertilizer source cost can be drastically cut compared to the other fertilizer recommendations and can provide similar results to turf quality. Again by applying more nitrogen than the current nutrient management plan an already good program can be improved upon by adding an additional pound of nitrogen per year to all of the fields. Applications of fertilizer should not be made with turf has gone dormant in order to reduce the risk of runoff and leaching.

Table 4. Fertilizer plan for only applications of Urea \$621 total

Athletic Fields	Mid May	Mid June	Early Aug.	Sept.	Oct.	Total N
Football	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 0.5 lbs /1000ft ²	4.5 lbs /1000ft²
Baseball	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 0.5 lbs /1000ft ²	4.5 lbs /1000ft²
Soccer	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 1 lbs /1000ft ²	46-0-0 Urea 0.5 lbs /1000ft ²	4.5 lbs /1000ft²

Summary

Both fertilizer plan recommendations provide adequate nitrogen to the turfgrass but in different forms and with different cost associations. Calculating the cost per pound of nitrogen for both plans there is a significant difference between the two plans. When applying one pound of 30-0-5 the cost per pound of nitrogen applied is \$1.75. Compare this to applying one pound of feed grade urea the cost per pound of nitrogen is \$0.53. This is a significant reduction in cost and is partially why the cost difference between the two plans are so great. While the first plan may cost more in total the relative cost per pound of nitrogen applied is quite good compared to similar fertilizers on the market.

Irrigation Report

Data, Methods and Interpretation

In order to evaluate the moisture levels of the soils in the field, readings were taken in a grid pattern every 5 yards with a soil moisture probe. Readings for the volumetric water content were taken as percentages, and graphed onto the image below:

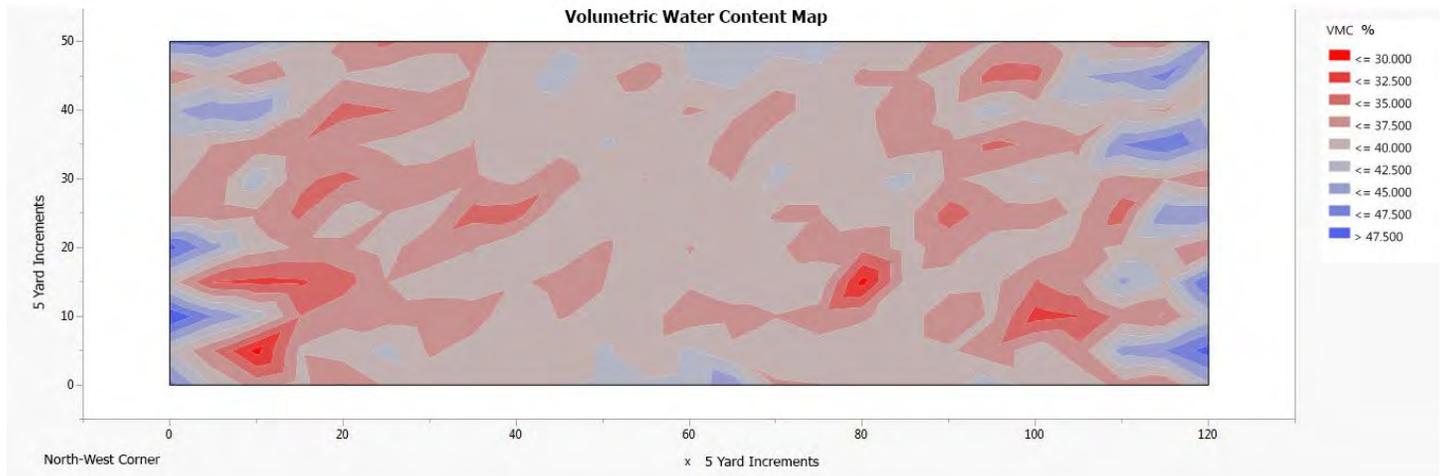


Figure 4: Shows the distribution of soil moisture on the football field. Red indicates areas with less moisture, and blue represents areas with more moisture.

The moisture readings from the football field were taken after several weeks of heavy rain, and reflect the current natural drainage and moisture patterns of the field. While the moisture distribution in the field is non uniform, it shows that surface drainage is adequately directing the flow of water towards the end zones and away from the center of the field. According to Mining Education Australia (available at <http://mea.com/au> under soil moisture content), a moisture content of 20% to 30% for sandy soils will allow adequate moisture to plants without drowning them, while a content closer to 50% is more common in clay soils. Based on the soil composition of the field, an acceptable moisture content in this case would be between 30% and 35%. As illustrated in the water content map, the center of the field was on average 5% to 7% above this range, while some parts of the end zones were 10% or more above the acceptable range. A large portion of the field in the 0 to 30 yard lines on both sides, is within the prescribed range; and only two small areas contain less than 30% moisture. Based on this information, the use of different irrigation techniques or the substitution of a more uniform soil is recommended in order to have more uniform soil moisture in the 30% to 35% volumetric water content range.

We evaluated the current distribution of water of the current irrigation system, which is a water wheel that is dragged from one end of the field and is slowly reeled backwards, by performing an irrigation audit.

Irrigation Audit Volumetric Water Content Map

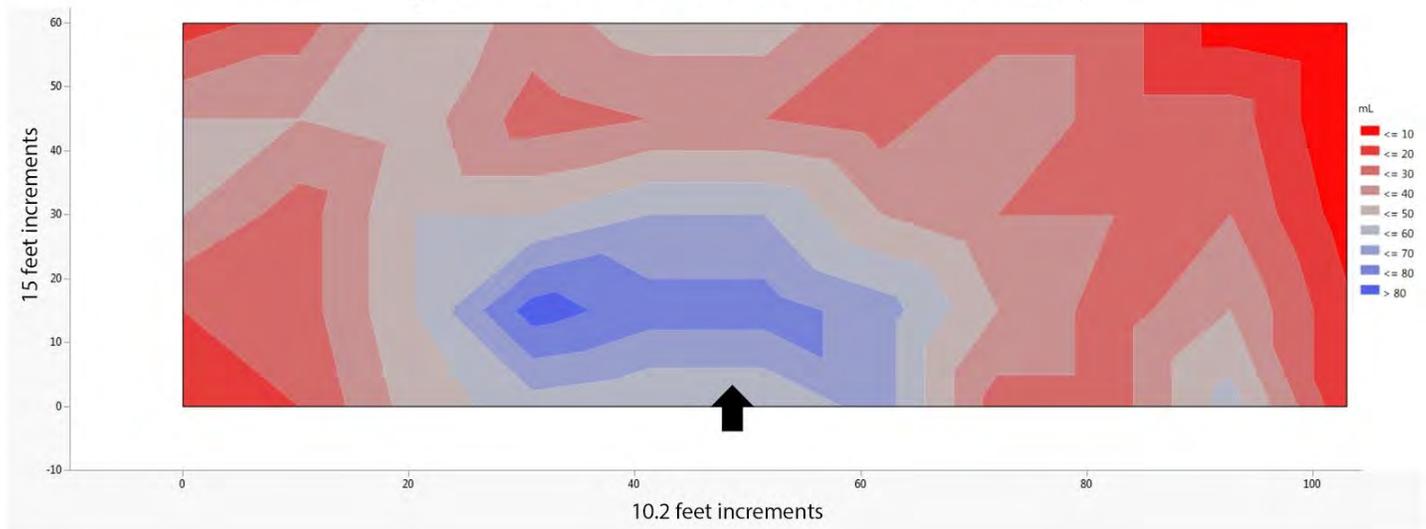


Figure 5: Map of our irrigation audit showing the distribution of water. Irrigation was run for 10 minutes at 180 degrees. The black arrow indicates where the irrigation cannon was located. For this audit, we did not allow the cannon to move backwards. The areas in blue indicate high levels of moisture and areas in red indicate low levels of moisture.

Figure 5 above shows that the distribution of water is not ideal. The area within a small 20 foot radius of the irrigation cannon received the most water while the area outside of the radius receives adequate to hardly any water. Drought has been an issue on the football field and originally it was thought that sandy soil was draining the water too rapidly. However, from our soil analysis, we know that the soil is actually a silty clay loam. Due to the uneven application of water from the current irrigation system, the soil is absorbing too much water in some locations, while it is absorbing almost no water in others. We calculated the Distribution Uniformity Coefficient (CU), which measures how uniformly water is applied expressed as a percentage, that equalled 57%. This means that almost twice as much water would have to be used in order to achieve a uniform application, which would cost more money and require more time and labor. The minimum recommendation is that the CU should be at least 80%, meaning that an increase in irrigation efficiency is possible, and is the key to saving time and limiting cost. It takes two people to set up the water wheel and it takes 8 hours to irrigate one field.

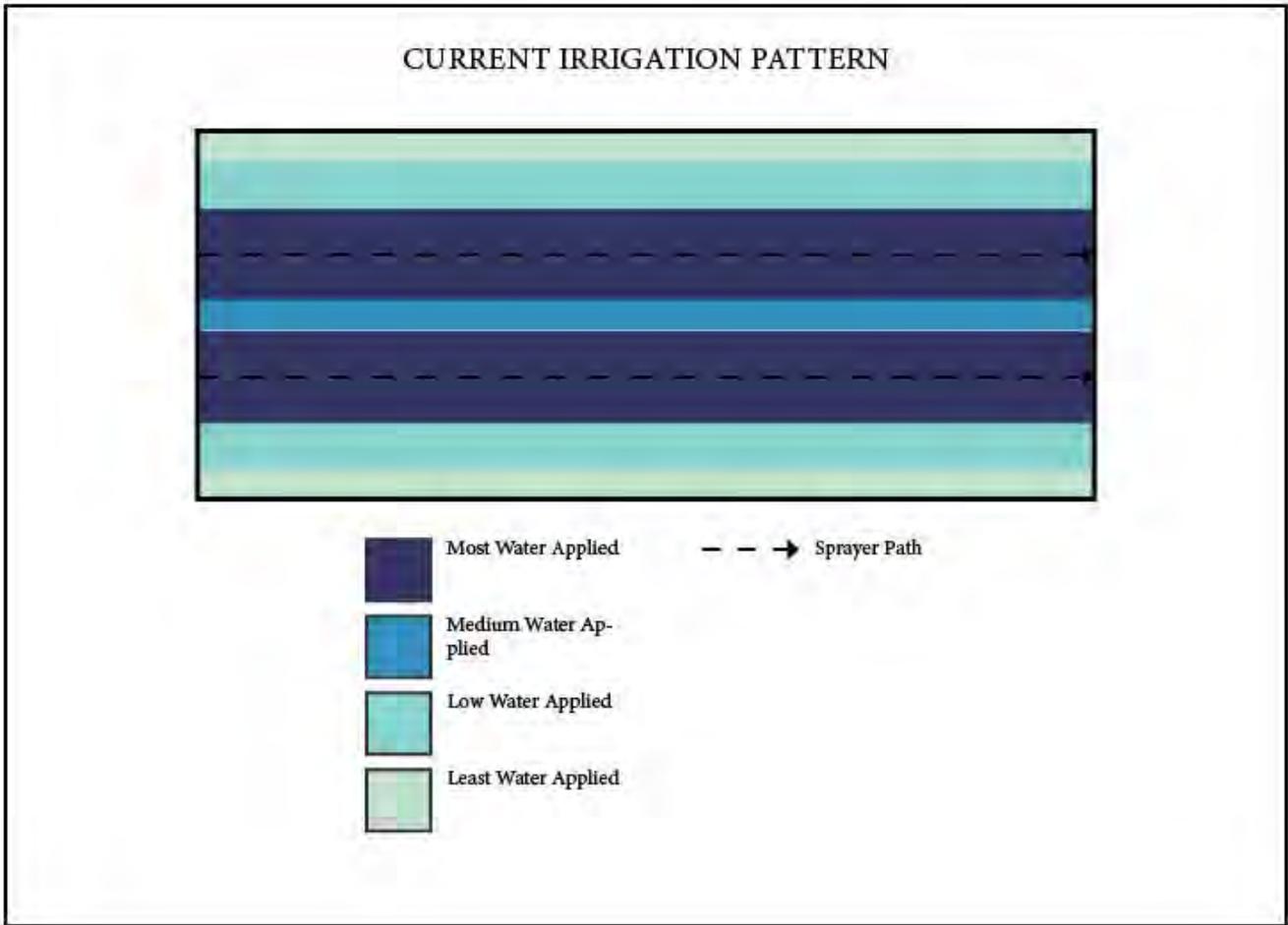


Figure 6: Water Application of Current System. This figure shows a hypothetical distribution of water based on the irrigation audit data in Figure 5.



Figure 7: Aerial image of the football field from showing the irrigation patterns of the wet and drought areas.

Due to the lack of a uniform distribution of water and the high cost of time and labor, we are proposing a new irrigation system to be installed on the football field to irrigate the turf evenly and optimize growing conditions. While there are clear up-front costs to our proposed systems, they will significantly reduce the labor and water cost of irrigating the field each season.

Proposals and Justifications

We are proposing drip irrigation as the only irrigation option in all three of our proposals. Being on a landfill site, the field is expected to shift and settle. Using a traditional irrigation system would run the risk of pipes breaking and having to readjust sprinkler heads regularly. This would cause a greater expense in budget and cause a greater increase in time for employees. Drip irrigation utilizes pipes that are flexible and can move with the landscape, avoiding the stresses of the landscape shifts. This type of irrigation also allows the water to be applied directly to the root zone of the turf as well as irrigating in more uniformly manner. Drip irrigation can be purchased installed by Reinders, Inc. We contacted them to appraise the price of the system and the estimated price of the drip irrigation system is \$23,160.50.

Below are our three irrigation/drainage proposals:

1. Level Spreader with Sand Cap System

Total Cost: \$269,160.50 to \$308,160.50

Cost by Component:

Drip Irrigation: \$23,160.50

Gabion Baskets: \$125,000.00

Non-woven Geotextile: \$9,500.00

Stone Fill (RipRap): \$75,500.00

Sand Cap System: \$36,000.00 to \$75,000.00

This is the most expensive system, but will be the most effective and draining the field and providing uniform water to the plants. This system will have a 12" deep sand cap, which will contain a drip irrigation system at 6" depth. Underneath the sand cap, there will be 1'-6" of crushed stone (5" to 10" in diameter) retained within gabion baskets. The gabion baskets will be FF size, woven wire, Midwest Gabion Baskets (3' x 1.5' x 12'). All of the stone structure will be lined with tyvar, in order to prevent sand and soil from filling the pore space between the stones, which will preserve the structure's integrity and functionality. The crushed stone will provide pore space for excess water to move through quickly, which will greatly improve drainage on the field while allowing for water to enter subsurface flow more quickly. The woven wire gabions can flex with the field if the landfill continues to settle unevenly, and they will help preserve the stone's pore space in the event of rise and fall of the material; as opposed to scattering and loss of pore space in a system without the wire retention. The sand cap system will also help to improve drainage on the field, and will allow for more uniform moisture. These methods of improving drainage will allow for the field to receive plenty of water from storms without becoming oversaturated, and combining it with drip irrigation will allow for additional water to be applied directly to the root zone of the plants as needed without worrying about a non-uniform application.

2. Sand Cap System

Total Cost: \$59,160.50 to \$99,160.50

Cost by Component:

Drip Irrigation: \$23,160.50

Sand Cap System: \$36,000.00 to \$75,000.00

This option is much less expensive than option 1, and will have many of the same benefits. It is a combination of drainage pipes and sand to allow for drainage and a stable playing surface. This option is not an entire renovation either which means the field is not completely out of play. It involves digging small trenches to put the drain pipes in and then filling the trench with sand. Next, the field is toppedressed with sand to build up a sand layer that will allow water to drain into the trenches. Having a sandy soil is great for athletic fields because it is resistant to compaction and allows water to move through the soil profile quickly to avoid ponding on the surface. More detailed information can be found on the PDF from Michigan State. <http://msue.anr.msu.edu/uploads/236/68678/Sand-Cap-Athletic-Fields.pdf>.

3. Drip Irrigation Only

Total Cost: \$23,160.50

Cost by Component:

Drip Irrigation: \$23,160.50

This option is the least expensive because it does not change or add any new soil to the existing field. Drip irrigation will be the only thing installed on the field. This will provide a better irrigation system than the current system. Time will also be saved as the drip irrigation system will be automatic allowing employees to use their time more effectively elsewhere. However, this option does not renovate the current soil profile so compaction, water retention due to clay, and wet spots will continue to persist.

Soil Moisture Monitoring Recommendations

Due to the cost invested in all of these proposals as well as the importance of applying the proper amount of water to the turf on athletic fields, we recommend purchasing a moisture probe such as the Field Scout TDR 300 Field Moisture Meter from Spectrum Technologies. This particular probe costs \$1100.00, and will allow maintenance crews to accurately monitor moisture across the field. The probe data could be tracked over time to help improve the overall efficiency and cost of irrigating the field, and could be used to determine when to run the system and when to skip a watering sequence. In addition, the probe data could be combined with graphing software in order to get a visual representation of the effect of irrigation on the field, which would be useful to identify any problems which occur with the irrigation system itself or with the structure of the soils or systems applied to the field.

Conclusion

In conclusion, the overall maintenance at Ahuska Park was excellent. However, we have identified some opportunities for improving turf health, playing conditions, and safety in the areas of general maintenance, fertilization, and irrigation practices. We think these recommendations will help the park remain an asset to the community as population and use increases. We hope that many of these recommendations can be employed as early as next season. If questions arise, don't hesitate to contact our professor, Dr. Doug Soldat.

Appendix

1. NR151 Report Ahuska Park
2. MLSN
 - a. https://www.paceturf.org/PTRI/Documents/1202_ref.pdf
3. Michigan Sand Cap

TURFGRASS NUTRIENT MANAGEMENT PLAN FOR AHUSKA PARK

Site: **Ahuska Park**

Location: **400 E Broadway Monona, WI 53716**

Owner: **City of Monona**

Land Manager: **Jake Anderson**

Mailing address: 1011 Nichols Road Monona, WI 53716

Phone: 608-222-4167

Nutrient Management Planner: **Ron Townsend and Logan Mohr**

Credentials: **UW Madison Turfgrass Students**

Date Created: **11/3/16**

Updates:

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NARRATIVE DESCRIPTION (this should be the last section that you write)

GOAL:

To minimize entry of sediment and nutrients into water resources while maintaining high quality turfgrass.

SITE DESCRIPTION:

Ahuska park is located in Monona, Wisconsin. It consists of three athletic fields for a total area of six acres; baseball diamond, football field, and soccer field. The soccer field has the highest traffic out of the three fields followed by the football field and the baseball field. The soccer field also appeared to have the worst turf quality due to the high use of the field and lack of drainage on the field. The football field predominantly down the middle of the field had a thinner stand of turf. The general wear pattern of a football field is between the hash marks in the middle of the field. The majority of the traffic on the field is concentrated to this area and requires more inputs in order to provide acceptable turf quality. The baseball field appears to have good turf quality except for a few areas in the infield where the majority of wear occurs.

The football field in particular was thought to be a sand based field. Upon further evaluation using the USDA soil survey (figure 3) the survey reveals that the majority of the park is a form of muck. Soil cores taken from the football field show that the field is not a sand based field but rather a silty clay loam soil. These findings were confirmed by sending the soil cores for texture analysis by Rock River Laboratory in Watertown WI.

CHARACTERISTICS OF FERTILIZED AREAS

Site:	Ahuska Park
Location:	Football Field
Size:	2.71 acres
Age:	10 years
Grass species:	Kentucky Bluegrass/ Perennial Ryegrass
Root zone or soil type:	Silty Clay Loam
Traffic:	High
Max. allowable N/year:	8 lbs/1000ft ²
Soil Test P Level:	55 ppm (Mehlich 3)
Max. allowable P ₂ O ₅ /year:	0 lbs/1000ft ²

Site:	Ahuska Park
Location:	Soccer Field
Size:	1.61 acres
Age:	10 years
Grass species:	Kentucky Bluegrass/ Perennial Ryegrass
Root zone or soil type:	Silty Clay Loam
Traffic:	High
Max. allowable N/year:	8 lbs/1000ft ²
Soil Test P Level:	39 ppm (Mehlich 3)
Max. allowable P ₂ O ₅ /year:	0 lbs/1000ft ²

Site:	Ahuska Park
Location:	Baseball Field
Size:	2.43 acres
Age:	10 years
Grass species:	Kentucky Bluegrass/ Perennial Ryegrass
Root zone or soil type:	Silty Clay Loam
Traffic:	High
Max. allowable N/year:	8 lbs/1000ft ²
Soil Test P Level:	38 ppm (Mehlich 3)
Max. allowable P ₂ O ₅ /year:	0 lbs/1000ft ²

Site:	GROUNDWATER MANAGEMENT AREAS
Location(s):	No groundwater areas are located on this site in reference to the site map located in the appendix on page 14.
Size:	N/A
Restrictions:	<p>Fertilizers with 50% or more slow-release N can be used in accordance with the rest of the nutrient management plan.</p> <p>Fertilizers with less than 50% should be applied at rates of 0.25 lbs N/1000 sq. ft.</p>

Site:	TYPE I SURFACE WATER MANAGEMENT AREAS (Areas with slopes >10% within 1000 feet of lake, pond (with an outlet) or wetland; or areas with slopes >10% within 300 feet of a perennial stream or river)
Location:	There are no areas located on the site in which fertilizers will be applied and are considered Type I areas.
Size:	N/A
Restrictions:	Fertilizers with 50% or less slow-release N can be used in accordance with the rest of the nutrient management plan.

Site:	TYPE II SURFACE WATER MANAGEMENT AREAS (Areas within 20 feet of lake, pond (with an outlet), river, stream or wetland)
Location:	There are no areas that will be fertilized on this site within 20 feet of type II areas.
Size:	N/A
Restrictions:	<p>Only foliar (liquid) N and P applications are allowed, except on greens and surrounds where drop spreaders may be used.</p> <p>No more than 2 lbs N/1000 sq. ft. can be applied annually.</p>

Fertilizer Spill Response Plan

If a spill occurs, take appropriate cleanup actions.

Spills involving over 250 lbs of dry or 25 gallons of liquid fertilizer must be immediately reported to the WDNR

24-hour spills hotline: 1-800-943-0003

Spills of lesser amounts are exempt from the reporting unless the spill had adversely impacted or threatens to adversely impact the air, lands, or waters of the state either as a single discharge or when accumulated with past discharges.

General Fertilizer Application Schedule 2016

Frequency of fertilization equipment calibration
Before each application

General Nutrient Application Schedule – Nitrogen/Phosphorus (lbs/1000 ft²)

Location	April	May	June	July	Aug	Sept	Oct	Nov	Total
Football	X	1/0	1/0	1/0	1/0	1/0	0.5/0	X	4.5/0
Baseball	X	1/0	1/0	1/0	1/0	1/0	0.5/0	X	4.5/0
Soccer	X	1/0	1/0	1/0	1/0	1/0	0.5/0	X	4.5/0

ACTUAL FERTILIZER APPLICATION RECORDS

Area

Date	Applied to	N rate (lbs/M)	P ₂ O ₅ rate (lbs/M)	Fertilizer Grade	N source	SRN (%)	Liquid/Granular	Applicator

Appendix

Figure 1. Groundwater map of Monona and parts of Madison WI

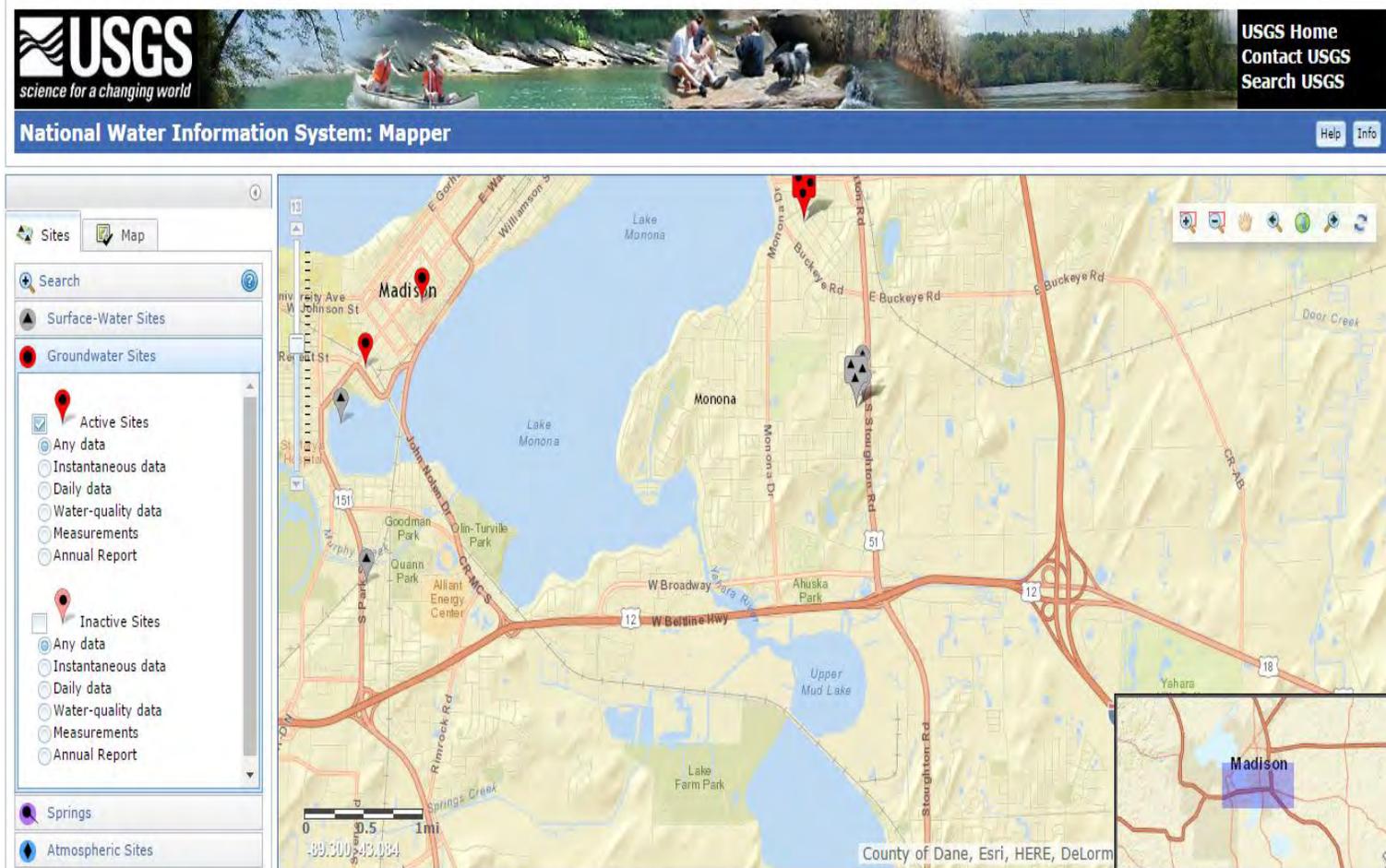


Figure 2. Site map of Ahuska Park in Monona WI

— Type II Surface Water Management



Figure 3. Soil survey map of Ahuska Park in Monona WI.

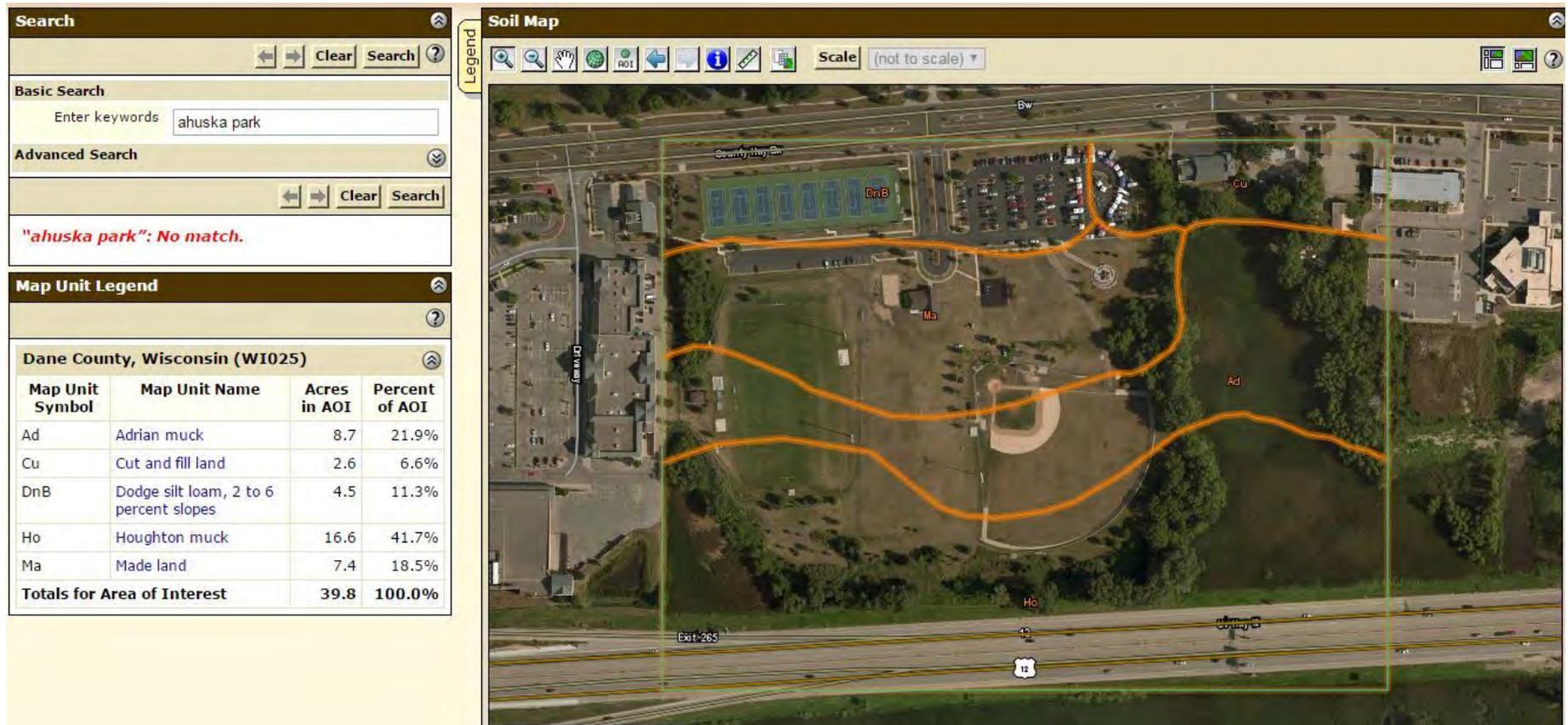


Figure 4. Soil core taken from the football field.





Soil Test Report - Field: 200 (Football)

Account: 1906
 UW Soil Science - Doug Soldat
 244 King Hall
 Madison, WI 53706

Report For:
 Doug Soldat

Lab #193910

County ADAMS
Received 11/1/2016
Slope 0%
Field
 200 (Football)
Acres
Plow Depth 7.0
Soil Name
 unknown
Previous Crop

Nutrient Recommendations												
Cropping Sequence	Yield Goal (per acre)	Crop Nutrient Need (lbs/acre)			Fertilizer Credit (lbs/acre)				Nutrients to Apply (lbs/acre)			
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O	
Corn, grain	171-190 bu	*	0	50	0	0	0	0	*	0	50	
Soybean, grain	56-65 bu	0	0	85	0	0	0	0	0	0	85	
Alfalfa, seeding	1.5-2.5 ton	0	0	105	0	0	0	0	0	0	105	
Alfalfa, established	5.6-6.5 ton	0	0	360	0	0	0	0	0	0	360	

*For information on the new N application rate guidelines for corn see <http://uwlax.soils.wisc.edu/pubs/MRTN>
 There is no lime recommendation.

Laboratory Analysis for Field 200 (Football), Lab No 193910

Sample Num	Soil pH	Om %	P ppm	K ppm	60-69 Lime Req(T/a)	Ca ppm	Mg ppm	Est Cec	B ppm	Mn ppm	Zn ppm	Sulfate-S ppm	Texture Code	Sample Density	Buffer Code
1	7.0	4.4	55	139		2654	731	24					2	0.95	N.R.

Additional Information, Secondary & Micronutrient Recommendations

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.
 Starter fertilizer (e.g. 10+20+20 lbs N+P2O5+K2O/a) is advisable for row crops on soils slow to warm in the spring.
 Because of very high P levels, P2O5 applications from fertilizer or manure should be reduced and crops with a high P removal should be grown.
 If alfalfa will be maintained for more than three years, increase recommended K2O by 20% each year.
 Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.
 Year 1: If corn is harvested for silage instead of grain apply extra 90 lbs K2O per acre to next crop.
 Ca - H Mg-H
 %Base Saturation: Ca 67.6% Mg 30.5% K 1.8%
 Response to added Ca is unlikely.
 Response to added Mg is unlikely.

Test Interpretation for Field 200 (Football), Lab No 193910

Crop Name	Nutrient						pH					
	Very Low	Low	Optimum	High	Very High	Excessive	Very Low	Low	Optimum	High	Very High	Excessive
Alfalfa, established	P						K					
Rotation pH	pH											



Soil Test Report - Field: 201 (Soccer)

Account: 1906
 UW Soil Science - Doug Soldat
 244 King Hall
 Madison, WI 53706

Report For:
 Doug Soldat

Lab #193910

County ADAMS
Received 11/1/2016
Slope 0%
Field
 201 (Soccer)
Acres
Plow Depth 7.0
Soil Name
 unknown
Previous Crop

Nutrient Recommendations												
Cropping Sequence	Yield Goal (per acre)	Crop Nutrient Need (lbs/acre)			Fertilizer Credit (lbs/acre)				Nutrients to Apply(lbs/acre)			
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O	
Corn, grain	171-190 bu	*	0	50	0	0	0	0	0	*	0	50
Soybean, grain	56-65 bu	0	0	85	0	0	0	0	0	0	0	85
Alfalfa, seeding	1.5-2.5 ton	0	0	105	0	0	0	0	0	0	0	105
Alfalfa, established	5.6-6.5 ton	0	0	360	0	0	0	0	0	0	0	360

*For information on the new N application rate guidelines for corn see <http://uwlab.soils.wisc.edu/pubs/MRTN>
 There is no lime recommendation.

Laboratory Analysis for Field 201 (Soccer), Lab No 193910

Sample Num	Soil pH	Om %	P ppm	K ppm	60-69 Lime Req(T/a)	Ca ppm	Mg ppm	Est Cec	B ppm	Mn ppm	Zn ppm	Sulfate-S ppm	Texture Code	Sample Density	Buffer Code
1	7.6	7.9	39	117		6129	663	45					2	0.94	N.R.

Additional Information, Secondary & Micronutrient Recommendations

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.
 Starter fertilizer (e.g. 10+20+20 lbs N+P2O5+K2O/a) is advisable for row crops on soils slow to warm in the spring.
 If alfalfa will be maintained for more than three years, increase recommended K2O by 20% each year.
 Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.
 Year 1: If corn is harvested for silage instead of grain apply extra 90 lbs K2O per acre to next crop.
 Ca - H Mg-H
 %Base Saturation: Ca 84.2% Mg 15.0% K 0.8%
 Response to added Ca is unlikely.
 Response to added Mg is unlikely.

Test Interpretation for Field 201 (Soccer), Lab No 193910

Crop Name	Nutrient						pH					
	Very Low	Low	Optimum	High	Very High	Excessive	Very Low	Low	Optimum	High	Very High	Excessive
Alfalfa, established	P						K					
Rotation pH	pH											



Soil Test Report - Field: 202 (Baseball)

Account: 1906
 UW Soil Science - Doug Soldat
 244 King Hall
 Madison, WI 53706

Report For:
 Doug Soldat

Lab #193910

County ADAMS
Received 11/1/2016
Slope 0%
Field
 202 (Baseball)
Acres
Plow Depth 7.0
Soil Name
 unknown
Previous Crop

Nutrient Recommendations												
Cropping Sequence	Yield Goal (per acre)	Crop Nutrient Need (lbs/acre)			Fertilizer Credit (lbs/acre)				Nutrients to Apply(lbs/acre)			
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O	
Corn, grain	171-190 bu	*	0	50	0	0	0	0	0	*	0	50
Soybean, grain	56-65 bu	0	0	85	0	0	0	0	0	0	0	85
Alfalfa, seeding	1.5-2.5 ton	0	0	105	0	0	0	0	0	0	0	105
Alfalfa, established	5.6-6.5 ton	0	0	360	0	0	0	0	0	0	0	360

*For information on the new N application rate guidelines for corn see <http://uwlax.soils.wisc.edu/pubs/MRTN>
 There is no lime recommendation.

Laboratory Analysis for Field 202 (Baseball), Lab No 193910

Sample Num	Soil pH	Om %	P ppm	K ppm	60-69 Lime Req(T/a)	Ca ppm	Mg ppm	Est Cec	B ppm	Mn ppm	Zn ppm	Sulfate-S ppm	Texture Code	Sample Density	Buffer Code
1	7.6	4.8	38	119		4895	751	37					2	0.99	N.R.

Additional Information, Secondary & Micronutrient Recommendations

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.
 Starter fertilizer (e.g. 10+20+20 lbs N+P2O5+K2O/a) is advisable for row crops on soils slow to warm in the spring.
 If alfalfa will be maintained for more than three years, increase recommended K2O by 20% each year.
 Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.
 Year 1: If corn is harvested for silage instead of grain apply extra 90 lbs K2O per acre to next crop.
 Ca - H Mg-H
 %Base Saturation: Ca 79.1% Mg 19.9% K 1.0%
 Response to added Ca is unlikely.
 Response to added Mg is unlikely.

Test Interpretation for Field 202 (Baseball), Lab No 193910

Crop Name	Nutrient						pH					
	Very Low	Low	Optimum	High	Very High	Excessive	Very Low	Low	Optimum	High	Very High	Excessive
Alfalfa, established	P						K					
Rotation pH	pH											



**ROCK RIVER
LABORATORY, INC.**
AGRICULTURAL ANALYSIS

710 Commerce Drive
PO Box 169
Watertown WI, 53094
Phone: 920-261-0446
Fax: 920-261-1365
www.rockriverlab.com

Date: 11/7/2016

Dealer: Doug Soldat

Sample ID	%Clay	%Silt	%Sand	Textural Class
203 (football)	27.8	56.0	16.2	Silty Clay Loam



September, 2014

Minimum Levels for Sustainable Nutrition Soil Guidelines

The Minimum Level for Sustainable Nutrition (MLSN) Guideline is a new, more sustainable approach to managing soil nutrient levels that can help you to decrease fertilizer inputs and costs, while still maintaining desired turf quality and playability levels. The MLSN guidelines were developed in a joint project between PACE Turf and the Asian Turfgrass Center. All soil analyses were conducted at Brookside Laboratories, New Bremen, OH.

	MLSN Soil Guideline
pH	>5.5
Potassium (K ppm)	37
Phosphorus (P ppm)	21
Calcium (Ca ppm)	331
Magnesium (Mg ppm)	47
Sulfur as sulfate (S ppm)	7

Nitrogen requirements are best determined based on **turf growth potential**, which incorporates site-specific weather and turf type to calculate nitrogen demand (Gelernter and Stowell, 2005. Golf Course Management, p. 108-113, March, 2005).

How the guidelines were developed

From a database of over 17,000 soil samples, we selected 3,721 that were classified as having:

- not poor performing turfgrass
- pH 5.5 - 8.5: to avoid aluminum toxicity at pH less than 5.5, and to avoid alkalinity hazard at pH greater than 8.5
- total exchange capacity <6 cmol/kg

A log-logistic model provided a significant fit of the data, and was used to identify the concentration (in ppm) of each nutrient that 10% of the soil samples fell below, but were still performing well. This 10th percentile value is the MLSN soil guideline shown above.

For more information, see the Facebook MLSN page at: www.facebook.com/mlsnturf

PACE TURF



ASIAN TURFGRASS CENTER

Analytical methods used to develop the Minimum Levels for Sustainable Nutrition Soil Guidelines

Electrical conductivity (1:2) converted to saturated paste equivalent, 1:2 soil method. Reference: Soil, Plant and Water Reference Methods for the Western Regions S-2.210, 2003. Values converted to saturated paste equivalent using following equation:

$$\text{Saturated paste equivalent EC dS/m} = 2.1 * (1:2 \text{ EC dS/m}) + 0.5$$

pH (1:1 in water). Reference: McLean, E.O. 1982. Soil pH and lime requirement. in Page, A.L. ed. Methods of soil analysis, part 2. Agronomy Monograph 9, 2nd ed. American Society of Agronomy and Soil Science Society of America, Madison, WI; pp. 199-223.

Mehlich III extractable sulfur, calcium, magnesium, potassium, sodium and phosphorus. Reference: Mehlich, A. 1984. Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Comm. Soil Sci. Plant Anal. 15:1409-1416.



Sustainability Metrics

Decreases in these 7 inputs can document your progress towards sustainability

The goal of “sustainable turf” is a worthy one, but there has been too little technical discussion of what it means, how it can be achieved, and how to measure progress towards sustainability. We have selected the seven parameters below because reductions in each can produce significant improvements in costs and environmental inputs, and because each can be easily quantified:

- 1. Reduce number of total maintained acres.** Reduce turf or heavily landscaped acres, and you will reduce water, equipment, manpower, fertilizer and pesticide inputs.
- 2. Reduce total water used.** Accomplish this by switching to reclaimed water, improving irrigation efficiency, reducing turf acres.
- 3. Reduce total nutrients applied.** Get more efficient with nitrogen, phosphorus, potassium and other key elements. The MSLN guidelines can help you here.
- 4. Reduce total pounds and toxicity levels of pesticides applied.** Implement an IPM plan and track reductions in total pounds on the ground. You can also document incorporation of safer, Class 3 pesticides and biocontrol approaches, and decreases in more toxic Class 1 and Class 2 pesticides.
- 5. Reduce manpower costs**
- 6. Reduce fuel use costs and volumes**
- 7. Reduce electrical use costs and kWhs used**

PACE TURF



ASIAN TURFGRASS CENTER

Sand Cap Build-up Systems for Michigan High School Fields

A.R. Kowalewski and J.N. Rogers, III

Department of Crop and Soil Sciences

Michigan State University

January 2008

Researchers propose a cost effective solution for failing native soil athletic fields across Michigan.

The typical Michigan high school athletic field serves as a focal point for social gatherings and adds to a sense of community pride. It is typically one of the few fields in town with lights, making it host to a variety of after school and work events including football, lacrosse, soccer, cheerleading, and band. Therefore, having an aesthetically pleasing and functional high school athletic field is often important to a variety of members in the average community.

The Problem

In order to have a significant number of events on a natural grass playing field and provide reasonable playing conditions throughout the fall, regardless of weather, the root zone must be primarily sand based. Unfortunately, the majority of Michigan's high school athletic fields are constructed on native soil. These fields rely on surface drainage during periods of heavy rainfall, failing to provide adequate drainage of surplus water. Saturated field conditions substantially reduce soil cohesion, adversely affecting traction and stability. Reduced stability in combination with heavy use in the typical fall athletic season, results in turfgrass failure, decreased overall playability and diminished visual aesthetics.

The Solutions

Current solutions to this problem include complete field conversion to a synthetic or sand-based turfgrass system. The first, most expensive, option is the installation of a synthetic athletic field ranges from \$600,000 – 1,000,000. The second option is a conventional sand-based field with a gravel drainage layer will cost from \$400,000 - 600,000, and take your field out of play for half of the year. This involves excavating 12-16" of soil and installing drain tile, a 4" gravel layer and a 12" sand based root zone. The

FAQ # 1: I have a field that drains poorly, what are the current renovation options?

- 1) Synthetic Field – \$600,000 - 1,000,000
- 2) Conventional Sand-Based Field – \$400,000 - 600,000
- 3) Sand-Capped Field - \$150,000 - 300,000
- 4) **Sand-Cap Build-Up Field \$36,000 - 75,000 (proposed method discussed below)**

third option for sand based athletic fields is the sand cap model, which has been employed many times in Michigan under the direction and guidance of Dr. John N. Rogers and MSU in the last 7 years, and can cost from \$150,000 - 300,000. This method is less expensive because only a small layer of topsoil (2-5") is removed from the field, and replaced with a 5-6" layer of specifically blended high sand-based root zone material. This sand material should be well-graded, particles distributed across a range of sizes, to maximize soil stability, and should contain approximately 90% sand. The turfgrass is then reestablished from seed. It is critical to use seed rather than sod, because sod placed over sand will create a perched water table, which will significantly inhibit soil infiltration. Installing an extensive drain system with drain lines running the length of the field spaced every 8-20' is also necessary. (New irrigation systems are usually automatic additions in these new fields, and are highly recommended because of the reduced water holding potential of the sand-based system.) This option also takes a field out of play the same amount of time. The major difference in cost between the conventional sand-based field and the sand cap is due to hauling off of the extra material during excavation as well as the total amount of material to bring the field back to grade.

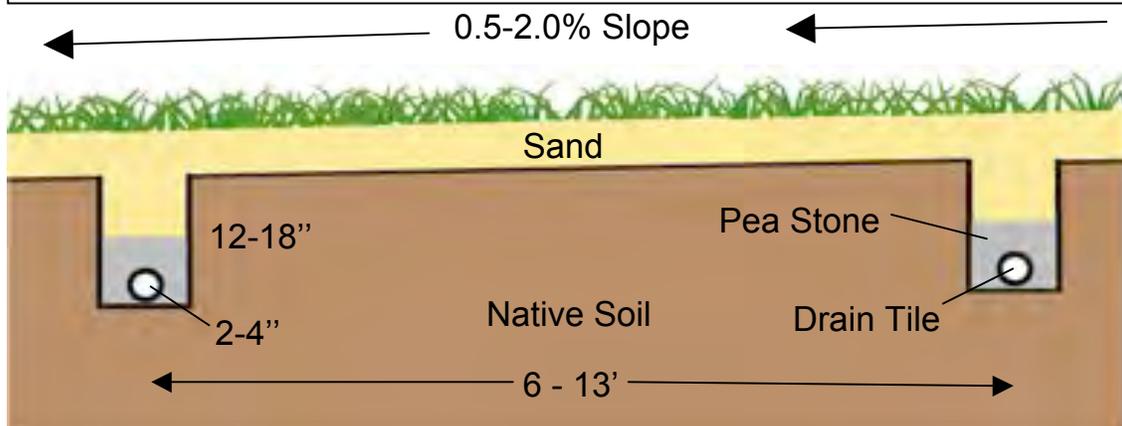
Sand-Cap Build-Up System

The fourth, least expensive, option for sand based fields is a "sand cap build-up system" (SCBUS), which can be done in four simple steps. The concept behind the SCBUS is to combine the advantages of the sand cap system (drainage and sand root zone playing surface) while providing almost uninterrupted availability. The idea is to cut drains in the existing field [running lengthwise on 6 - 13' centers depending on the surface grade and slope (see **Renovation Flow Chart: pg 7**)], put drain tile in the lines, back fill with pea stone and then sand, or a coarse sand alone (Image 1 and 2: pg 8).

Sand-Cap Build-Up System

- Step 1.** Install drain lines (6' spacing, running length wise)
- Step 2.** Repair irrigation system
- Step 3.** Renovate field (core cultivation, and over-seeding)
- Step 4.** Begin sand topdressing. (well-graded sand-based material)

Following drain tile installation, repeated sand topdressing will produce a sand-based system, capable of rapid drainage.



FAQ #2: Will this renovation process take my field out of play?

No, your field is never totally out of play. This process does not remove your existing turf, but rather amends it. However, it will require regular topdressing for more than a year to produce a sufficient system.

At this time it is important to correct any low spots (wet spots) in the existing slope by leveling them with topsoil; soil removed during drain line installation would be perfectly appropriate. Subsequent repair to any irrigation line damage is necessary. Then begins an aggressive sand-based topdressing program during the summer with a “specific high sand-based material” (approximately 90% well-graded sand). Sand topdressing would be coupled with your annual field renovation program (including reseeding, cultivation, etc). The goal would be to add at least 2” of topdressing as fast as possible without compromising fall time playing quality. This means that the topdressing program would begin in early June and go only through early August. Adding 1” would not be an issue to surface stability in this time frame. During this period it is also important to regularly clean and maintain irrigation heads to prevent sand from damaging the system. The topdressing stops in early August to allow settling prior to usage in the fall. **During the first year your field may not reach the level of sand necessary to prevent saturated surface conditions, particularly in low lying areas.** The drain tiles will prevent standing water from developing providing you with a system that is better than your original conditions. The next spring the topdressing process would begin again to add the rest of the material, further increasing drainage capacity. At the end you would have a well drained, stable, sand-based field at a fraction of the cost required for other renovation processes.

FAQ #3: Who can do this renovation process?

This is a job someone on staff can do, acting as the general contractor and sub-contract out the drain installation and irrigation repair. They can order the sand topdressing from a reliable source (provided below). Finally, the act of applying the topdressing can be done by in-house staff (with minimal training) or contracted out.

FAQ #4: What about the drain spacing and depth of root zone specifications? Are we a guinea pig?

The drain spacing of 6’ centers is about extensive as possible and should be more than adequate. A research project to investigate the optimum spacing was started in 2007. Investigation is exploring wider spacing in an effort to provide potentially lower costs to installation, while maintaining adequate drainage. Preliminary research has shown that when an inch of topdressing has been applied 13’ drain spacing will provide the same benefits as 6’ spacing at a lower cost of installation. The depth of root zone is actually a little easier to manipulate, simply by the nature of the method of application (topdressing rates can be increased or decreased), and therefore is even less of a concern. Preliminary findings also suggest that as little as 1 inch of cumulative topdressing sand will substantially decrease surface soil moisture, therefore improving surface stability. However, greater sand depths will not only improve drainage, but will also provide a deeper, non restrictive rooting media.

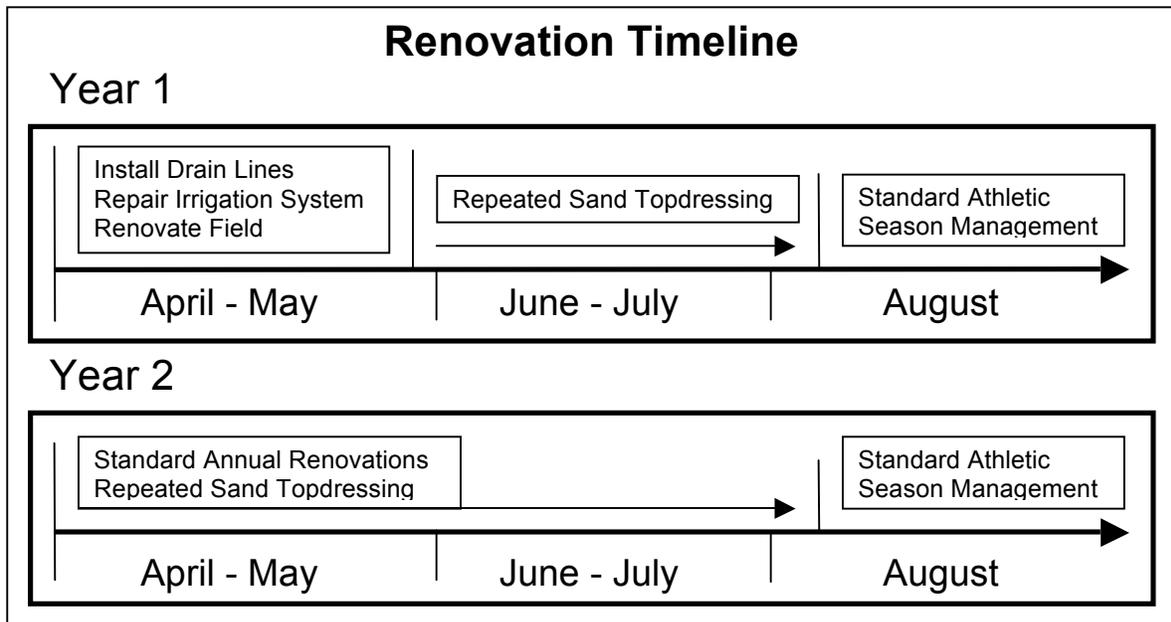
FAQ #5: Has this been done to athletic fields in Michigan?

Yes, currently two high schools (Okemos and Grand Blanc) began this process in 2007, but this process has been going on with native soil golf course putting greens for the last 30 years. For this reason, the feasibility is not a question. It makes sense and it has been done in other areas of turf for many years. One big plus is the specific sand based root zone which will be topdressed on the fields. This specific sand has been providing exceptional performance on Michigan fields for the last 10 years. The advantage of this process is that in the end you have transformed your poorly drained native soil field to a stable, well-drained sand-capped field.

The SCBUS will not only reduce the annual repair costs required for a native soil field, but also reduce the initial cost of field renovation. To install the drainage and backfill a field with 6' centers (would approximately have thirty 400' x 4" drain lines @ \$4-5/linear foot) would cost \$48,000-60,000 installed, while a field with 13' centers \$22,400-28,000. Then topdressing would begin on the field during the summer with each inch of material costing about \$9,000 (labor and materials).The sand is added on a weekly basis and the existing grass grows up through the sand profile. This option is considerably less expensive than the first three options. It will likely take more than one year to get 2" of material built up, but you also have the option of adding more than 2" if the situation calls for it in the future.

Research

The SCBUS is a natural extension and combination of two currently proven applications. First, the use of repeated sand topdressing in order to develop a sand-based profile has proven to be successful in the golf course industry for over 30 years. Second, sand-based athletic fields are widely used in Michigan and proven to provide a superior playing surface in comparison to native soil fields.



Sand-Cap Build-Up System

Step 1. Install drain lines – Renovation Services & Drainage Specialist

Step 2. Repair irrigation system – Renovation Services & Turf Suppliers, etc.

Step 3. Renovate field – Renovation Services, Turf Supplies, etc. & Turf Equipment Suppliers

Step 4. Begin sand topdressing – Sand Topdressing Sources

Research on this renovation process is currently be conducted by Alexander R. Kowalewski, PhD student, to provide a scientific justification for the procedure. Funding will be sought through sources within the state to carry out his specific research project. If you choose to move forward with a project of this nature please contact John N. Rogers, III or Alexander R. Kowalewski for progress monitoring through updates and possible visitations.

Preliminary Research Findings

Preliminary findings from research conducted in 2007 it appears that as much as " " of topdressing can be applied at once and 1" of topdressing can safely be applied over a one month period without being detrimental to turfgrass health or stability (Image 3: pg 8). A drain tile spacing of 13', which will substantially reduce installation costs, is adequate to provide sufficient drainage when 1" of sand topdressing has been applied. Findings also suggest that as little as ! " of topdressing, in combination with drain tiles, will substantially increase field surface drainage.

Resources

There are several excellent sources in the area to service your athletic field needs. They are provided below. When you call these companies, they will direct you to a specific sales person in your area. These resource contacts are of particular importance because they are familiar with the specifications and recommendations stated in this document and/or are in regular contact with Dr. John N. Rogers, III.

Contacts

Dr. John N. Rogers III
Michigan State University
Crop and Soil Sciences
160A Plant and Soil Science Building
East Lansing, MI 48824
(517)-355-0271x1136
rogersj@msu.edu

Alexander R. Kowalewski
Michigan State University
Crop and Soil Sciences
162 Plant and Soil Science Building
East Lansing, MI 48824
(517)-355-0271x1137
kowalew8@msu.edu

Researchers and resources mentioned in this document are in no way, shape or form liable for personal injury, misinterpretation of information and recommendations, or detrimental field conditions resulting from deviation from the above described renovation processes and procedures.

Davey Golf Pontiac, MI 248-332-6690	Sports Turf Specialists 281 Taft St. Zeeland, MI 616-866-7395	Turf Services, Inc 17205 148 th St. Spring Lake, Mi 616-842-4975
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Country Club Turf 4137 W. Michigan Ave. Jackson, MI 49202 517-750-7513	Contractors Landscape 3681 Frost Road Webberville, Mi 48892 517-775-8787 eeeeverett@core.com
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Turf Supplies, etc.

Rhino Seed and Turf Brighton, MI 800-482-3130	Turfgrass, Inc P.O. Box 667 S. Lyon, MI 48178 248-4371427 1-800-521-8873 Fax: 248-0437-5610	Verdicon, Inc Dave Polen, Sales Rep 586-839-8930
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Turf Equipment Suppliers

Toro Equipment Spartan Distributors Auburn Hills, MI 800-822-2216	John Deere Equipment Weingartz 39050 Grand River Farmington Hills 888-4-JD-TURF	Jacobsen Equipment W. F. Miller 25125 Trans X Novi, MI 800-555-8189
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Sand Topdressing Sources	Drainage Specialist
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Osborn Industries 5850 Pardee Taylor, MI 48180 313-292-4140	J.W. Surge Industries Muskegon, MI 231-740-0682	Water Management 1596 S. College Rd. Mason, MI 48854 517-628-8001
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Renovation Flow Chart

The following flow chart is designed for making renovation decisions prior to the initiation of the renovation process based on a variety of possible existing field conditions.

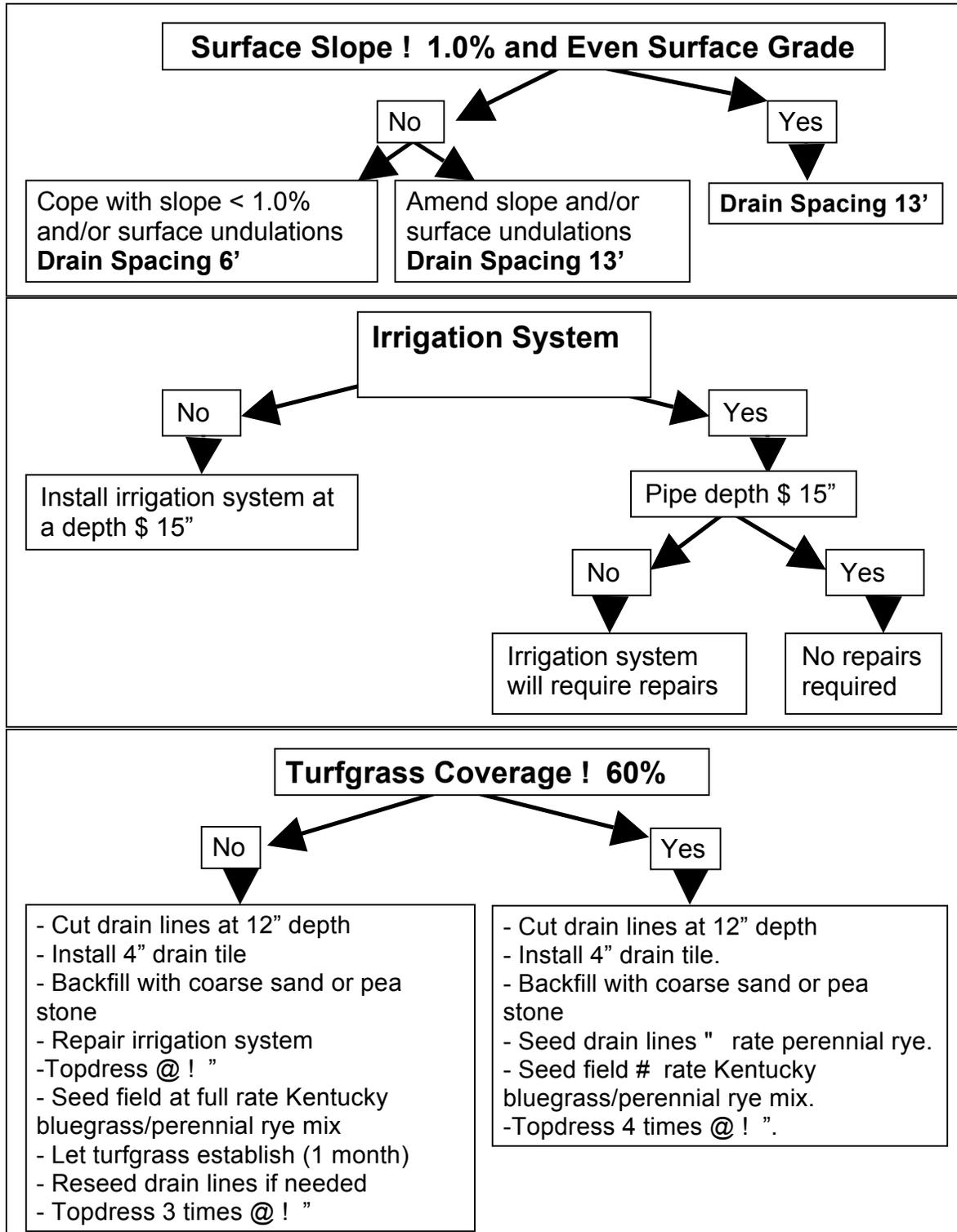


Image 1: Cutting drain lines, installing drain tiles, and backfilling lines with a sand-based root zone material, Grand Blanc High School, Grand Blanc, Mich., Water Management Inc., May 2007.



Image 2: Grand Blanc High School athletic field after the drain line installation process, Grand Blanc, Mich., Water Management Inc., May 2007.



Image 3: Four sand-based topdressing applications applied to a newly established turfgrass stand over a one month period at " inch per application, providing a 1 inch of sand-based root zone material, research plots at the Hancock Turfgrass Research Center, East Lansing Mich., August 2007.



PARK & RECREATION BOARD (Agenda Item 4A)

Meeting Date: January 10, 2017

AGENDA ITEM:

Madison Youth Sailing Foundation Facility Use Agreement

REQUESTED BY:

Jake Anderson/Parker Waller

POLICY ANALYSIS STATEMENT:

Parker Waller from Madison Youth Sailing Foundation appeared at the June 2016 meeting and proposed installing (3) slips at Schluter Park for the summer learn to sail program. Currently the group stores sail boats at Stone Bridge Park and then brought them down to Schluter Park for the program.

The attached Facility Use Agreement is consistent with other agreements with Non-Profit groups. The fee is based on the average rental cost per slip that the city charges Lake Monona Sailing Club, and the discount for registration would benefit Monona residents.

Staff Recommendation is to proceed with the Facility Use Agreement for a 3 year period.

FISCAL IMPACT:

\$120/year rental fee would go to Park Field Rental under the Recreation Budget

Reviewed By City Administrator
_____ Yes _____ No

Action Taken: _____
Approval: _____
Disapproval: _____
Tabled: _____
Committee Meeting Date: _____

CITY OF MONONA
FACILITY USE AGREEMENT

THIS AGREEMENT is entered into effective as of the last date of signature by and between the City of Monona, a Wisconsin municipal corporation (hereinafter the “CITY”) and the entity identified below (hereinafter the “LICENSEE”).

LICENSEE: **Madison Youth Sailing Foundation – Parker Waller**
ADDRESS: 4627 Tonyawatha Tr
CITY/STATE/ZIP CODE: Monona, WI 53716

In consideration of the mutual covenants contained in this AGREEMENT and for other good and valuable consideration, the receipt and sufficiency of which are hereby mutually acknowledged, the parties agree as follows:

1. SCOPE OF USE. The CITY hereby grants the LICENSEE the right to use the following facilities during the periods identified:

FACILITY: **Schluter Park Pier**
Schluter Park Gazebo

PERMITTED USE:

Madison Youth Sailing Foundation summer Learn to Sail program at Schluter Park. MYSF will install up to (3) sailing boat lifts to the existing Schluter Park pier to store and use sail boats for a summer learn to sail program. The placement of each boat lift will be approved by the Parks & Recreation Director

DAYS & TIME USE IS AUTHORIZED (hereinafter the “AUTHORIZED PERIODS”):

Boat Slips

- All slips shall be installed no earlier than April 15th each year and removed each year no later than November 15th
- Licensee will have full nonexclusive use of the park gazebo during permitted events. Under no circumstances, shall the City be liable for the loss of any such items stored at the gazebo during events.
- Only vehicles authorized by the Parks & Recreation Director will be allowed to drive on the grass for any purpose.

Signage

- No sign shall be posted on the property at any time without prior approval from the Parks & Recreation Director and conforming to local ordinances as stated in sec. 13-1-222.

Vendors

- No outside vendor will be allowed to sell any product or service on property without prior approval from the Parks & Recreation Director.

Miscellaneous

- Monona residents will receive a 25% discount off the normal registration fees to participate in any youth sailing camp or class
- Licensee is responsible for the administration and on-site supervision of their program including actions of their staff and registered participants as well as the equipment and supplies that are the property of the organization.
- Licensee shall be responsible for monthly maintenance of the shoreline at Schluter Park. Licensee will coordinate with Parks & Recreation Director on what needs to be done and where to dispose of trash, seaweed, etc
- Licensee shall maintain the parking lot, common areas, and restrooms in a trash free condition when in use during permitted times.

- Licensee shall provide maintenance requests as reasonable requested by the Parks & Recreation Director for any issues that need to be addressed at the facility.
- City of Monona shall notify Licensee of staff or committee recommendation of any sanctioned group fee increases for the next budget year and inform Licensee of dates of meetings of Parks & Recreation Board and City Council at least 30 days in advance of any recommendations or decisions made by those boards.
- Any request that is not covered in this agreement shall be given to the Parks & Recreation Director at least 24 hours in advance of when request is needed.

2. CONSIDERATION. In consideration of the above identified use of the FACILITY, LICENSEE shall pay the CITY the sum of **\$120 per year**. All delinquent amounts shall accrue interest at the rate of 18% per year.

3. TERM/TERMINATION. The term of this AGREEMENT shall commence on January 1, 2017 and terminate on December 31, 2020. The CITY may, for any reason or no reason at all, terminate this AGREEMENT upon thirty days notice.

4. PROPERTY CONDITION. The CITY makes no representations or warranties as to the condition of the FACILITY or its adequacy for LICENSEE'S intended use. LICENSEE agrees to take the FACILITY as is and acknowledges that it shall be LICENSEE'S responsibility and obligation to assure that the FACILITY is in safe condition to be used for the purpose anticipated. LICENSEE acknowledges that it shall be obligated to regularly inspect the FACILITY and to promptly take affirmative steps where necessary to warn users or rectify hazards in order to prevent injury to property and persons.

5. CITY ACCESS. The CITY reserves the right to enter the FACILITY at any time during the AUTHORIZED PERIODS for any reasonable purpose. In the event the CITY enters the FACILITY during AUTHORIZED PERIODS in a manner which interferes with LICENSEE'S use, LICENSEE'S sole remedy shall be refund of the CONSIDERATION paid for the periods of interference or termination of this AGREEMENT.

6. LICENSEE RESPONSIBILITIES.

A. LICENSEE shall remove all its property and equipment from the FACILITY outside of the AUTHORIZED PERIODS. LICENSEE is solely responsible for ensuring their property and equipment used is safe and properly maintained. LICENSEE shall have sole responsibility for the protection of LICENSEE'S property and agrees that the CITY shall have no liability for injury to persons during LICENSEE'S activities or damage to, or theft of, property located therein.

B. LICENSEE shall provide, at its sole expense, an adult on-site manager during the AUTHORIZED PERIODS, who shall be responsible for supervision of all individuals participating in the activities conducted pursuant to this AGREEMENT.

C. LICENSEE shall comply with, and ensure all of its participants comply with, all rules and regulations which shall be instituted by the CITY from time to time.

D. LICENSEE shall repair all damage to the FACILITY caused by its employees, agents and participants, keep the FACILITY clean and orderly at all times, and not conduct any activity which would reasonably disturb others using the FACILITY. LICENSEE shall not be responsible to clean or maintain FACILITY outside of the intended use of LICENSEE. LICENSEE is under no obligation to leave FACILITY in a condition better than found. LICENSEE may contact the City to notify them of repair/cleaning issues that are encountered that are the responsibility of the City.

7. INDEMNITY. To the fullest extent allowable by law, the LICENSEE hereby indemnifies and shall

defend and hold harmless the CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers and each of them from and against any and all suits, actions, legal or administrative proceedings, claims, demands, damages, liabilities, interest, attorneys' fees, costs, and expenses of whatsoever kind or nature whether arising from the activities granted hereunder and in any manner directly or indirectly caused, occasioned, or contributed to in whole or in part or claimed to be caused, occasioned, or contributed to in whole or in part, by reason of any act, omission, fault, or negligence, whether active or passive, of the LICENSEE or of anyone acting under its direction or control or on its behalf in connection with or incident to the performance of this AGREEMENT regardless if liability without fault is sought to be imposed on the CITY. The LICENSEE'S aforesaid indemnity and hold harmless agreement shall not be applicable to any liability caused by the sole fault, sole negligence, or willful misconduct of the CITY, or its elected and appointed officials, officers, employees or authorized representatives or volunteers. This indemnity provision shall survive the termination or expiration of this AGREEMENT.

In any and all claims against the CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers by an employee of the LICENSEE, any sub-LICENSEE, or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the LICENSEE or any sub-LICENSEE under Worker's Compensation Acts, Disability Benefit Acts, or other employee benefit acts.

No provision of this indemnification clause shall give rise to any duties not otherwise provided for by this AGREEMENT or by operation of law. No provision of this indemnity clause shall be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity that would otherwise exist as to the CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers under this or any contract. This clause is to be read in conjunction with all other indemnity provisions contained in this AGREEMENT. Any conflict or ambiguity arising between any indemnity provisions in this AGREEMENT shall be construed in favor of indemnified parties except when such interpretation would violate the laws of the state in which the job site is located.

The LICENSEE shall reimburse the CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers for any and all legal expenses and costs, including attorney fees, incurred by each of them in connection therewith or in enforcing the indemnity herein provided. The LICENSEE'S obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers.

8. INSURANCE. LICENSEE shall, at its sole expense, maintain in effect at all times during the term of this AGREEMENT commercial general liability insurance coverage as set forth in Exhibit A attached hereto and shall to the CITY the specified evidence of such insurance within 30 days of execution of this AGREEMENT.

9. MISCELLANEOUS PROVISIONS.

A. ENTIRE AGREEMENT: This AGREEMENT supersedes any and all agreements previously made between the parties relating to the subject matter of this AGREEMENT and there are no understandings or agreements other than those incorporated in this AGREEMENT. This AGREEMENT may not be modified except by an instrument in writing duly executed by all the parties.

B. PARTIES BOUND: This AGREEMENT shall be binding upon and inure to the benefit of the parties and their respective heirs, legal representatives, successors and assigns. It is expressly understood the LICENSEE may not assign any rights or obligations under this AGREEMENT without the prior written consent of the CITY.

C. SEVERABILITY: If any provision of this AGREEMENT shall under any circumstances be deemed invalid or inoperative, this AGREEMENT shall be construed with the valid or inoperative provision deleted and the rights and obligations construed and enforced accordingly.

D. NOTICE: Notices shall be deemed delivered as of the date of postmark if sent by certified mail, postage prepaid.

E. NEUTRAL CONSTRUCTION: The parties acknowledge that this AGREEMENT is the product of negotiations between the parties and that, prior to the execution hereof, each party has had full and adequate opportunity to have it reviewed by, and to obtain the advice of, its own legal counsel. Nothing in this AGREEMENT shall

be construed more strictly for or against either party because that party's attorney drafted this AGREEMENT or any part hereof.

IN WITNESS WHEREOF, the parties have executed this **AGREEMENT** effective as of the last date of signature below.

CITY OF MONONA

By: _____
Robert Miller, Mayor

Attest: _____
Joan Andruz, City Clerk

Date

Date

LICENSEE

By: _____

(Name & Title)

Date

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EXHIBIT A
INSURANCE REQUIREMENTS

Unless otherwise specified in this AGREEMENT, the CONTRACTOR shall, at its sole expense, maintain in effect at all times during the performance of the work, insurance coverage with limits not less than those set forth below with insurers and under forms of policies set forth below.

Worker’s Compensation and Employer’s Liability Insurance—The CONTRACTOR shall cover or insure under the applicable labor laws relating to worker’s compensation insurance, all of their employees in accordance with the law in the State of Wisconsin. The CONTRACTOR shall provide statutory coverage for work related injuries and employer’s liability insurance with limits of \$1,000,000 each accident, \$1,000,000 disease policy limit, and \$1,000,000 disease each employee.

Commercial General Liability and Automobile Liability Insurance—The CONTRACTOR shall provide and maintain the following commercial general liability and automobile liability insurance:

Coverage—Coverage for commercial general liability and automobile liability insurance shall be at least as broad as the following:

1. Insurance Services Office (ISO) Commercial General Liability Coverage (Occurrence Form CG 0001)
2. Insurance Services Office (ISO) Business Auto Coverage (Form CA 0001), covering Symbol 1 (any vehicle)

Limits—The CONTRACTOR shall maintain limits no less than the following:

1. General Liability—One million dollars (\$1,000,000) per occurrence (\$2,000,000 general aggregate if applicable) for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the project/location (with the ISO CG 2503, or ISO CG 2504, or insurer’s equivalent endorsement provided to the CITY) or the general aggregate including product-completed operations aggregate limit shall be twice the required occurrence limit.
2. Automobile Liability—One million dollars (\$1,000,000) for bodily injury and property damage per occurrence limit covering all vehicles to be used in relationship to the AGREEMENT.

Required Provisions—The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

1. The CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers are to be given additional insured status (via ISO endorsement CG 2010, CG 2033, or insurer’s equivalent for general liability coverage) as respects: liability arising out of activities performed by or on behalf of the CONTRACTOR; products and completed operations of the CONTRACTOR; premises occupied or used by the CONTRACTOR; and vehicles owned, leased, hired or borrowed by the CONTRACTOR. The coverage shall contain no special limitations on the scope of protection afforded to the CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers.

2. For any claims related to this project, the CONTRACTOR'S insurance shall be primary insurance as respects the CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers. Any insurance, self-insurance, or other coverage maintained by the CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers shall not contribute to it.
3. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the CITY, its elected and appointed officials, officers, employees or authorized representatives or volunteers.
4. The CONTRACTOR'S insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
5. Each insurance policy required by this AGREEMENT shall state, or be endorsed to state, that coverage shall not be canceled by the insurance carrier or the CONTRACTOR, except after sixty (60) days (10 days for non-payment of premium) prior written notice by U.S. mail has been given to the CITY.
6. Such liability insurance shall indemnify the CITY against loss from liability imposed by law upon, or assumed under contract by, the CONTRACTOR for damages on account of such bodily injury (including death), property damage, personal injury, completed operations, and products liability.
7. The general liability policy shall cover bodily injury and property damage liability, owned and non-owned equipment, blanket contractual liability, completed operations liability, explosion, collapse, underground excavation, and removal of lateral support, and shall not contain an exclusion for what is commonly referred to by the insurers as the "XCU" hazards. The automobile liability policy shall cover all owned, non-owned, and hired vehicles. All of the insurance shall be provided on policy forms and through companies satisfactory to the CITY, and shall have a minimum A.M. Best's rating of A-VII.

Deductibles and Self-Insured Retentions—Any deductible or self-insured retention must be declared to and approved by the CITY. At the option of the CITY, the insurer shall either reduce or eliminate such deductibles or self-insured retentions.

Evidences of Insurance—Prior to execution of the AGREEMENT, the CONTRACTOR shall file with the CITY a certificate of insurance (Acord Form 25-S or equivalent) signed by the insurer's representative evidencing the coverage required by this AGREEMENT. Such evidence **shall include** an additional insured endorsement signed by the insurer's representative. Such evidence shall also include confirmation that coverage includes or has been modified to include all required provisions 1-7.

The CONTRACTOR shall, upon demand of the CITY, deliver to the CITY such policy or policies of insurance and the receipts for payment of premiums thereon.

Sub-Contractors—In the event that the CONTRACTOR employs other contractors (sub-contractors) as part of the work covered by this AGREEMENT, it shall be the CONTRACTOR'S responsibility to require and confirm that each sub-contractor meets the minimum insurance requirements specified above.

PARK & RECREATION BOARD (Agenda Item 5A)

Meeting Date: January 10, 2017

AGENDA ITEM:

Bridge Rd Park Public Input

REQUESTED BY:

Jake Anderson

POLICY ANALYSIS STATEMENT:

The 2017 Capital Budget including funding for a park improvement project at Bridge Rd Park. All residents that live within a ¼ mile of the park received a notification letter of the public input meeting along with marketing on weekly email blasts, website, and social media. This agenda item is an opportunity for people to provide input into:

- Type of playground equipment interested in
- Location of playground equipment

Staff will have a few conceptual plans available at the meeting for the entire site plan with anticipate costs. Attached are a few playground samples with the current budget.

FISCAL IMPACT:

\$130,000 is allocated in the budget for this project

Option # 1 Estimated Cost: \$125,045

This option would include replacing playground equipment in its current location with a mix of poured-in play surfacing and Engineered Wood Fiber (EWF) chips along with a 6' wide concrete path around the perimeter of the playground with access from two spots along Bridge Rd. This option would also include a bubbler and a pad for a permanent portable toilet.

Option #2 Estimated Cost: \$132,600

This would include replacing playground equipment in its current location with a mix of poured-in play surfacing and Engineered Wood Fiber (EWF) chips with a 6' wide concrete extending from Bridge Rd to Midland Lane with a loop that would connect the basketball court with one edge of the playground. This option would also include a bubbler and a pad for a permanent portable toilet.

Option #3 Estimated Cost: \$143,965

This would including replacing playground in a new location, moving further back into the park away from Bridge Rd. A mix of poured-in play surfacing and Engineered Wood Fiber (EWF) chips with a 6' wide concrete path connecting Bridge Rd to Midland Lane. This option would also include extending the basketball court to make it a full court. This option would also include a bubbler and a pad for a permanent portable toilet.

Reviewed By City Administrator
_____ Yes _____ No

Action Taken: _____
Approval: _____
Disapproval: _____
Tabled: _____
Committee Meeting Date: _____



Monona Parks and Recreation Department

1011 Nichols Rd., Monona, WI 53716
 608-222-4167
 www.mymonona.com

**OPINION OF PROBABLE COST
 BRIDGE RD PARK – OPTION 1**

Bid Item Ref No	Description	Unit of Measure	Estimated Quantity	Unit Price (\$)	Item Total (\$)
1	Excavation Common (Sidewalk & playground areas)	CY	280	15	\$4,200
2	Base Aggregate Dense 1 1/4 inch (Sidewalk 8' wide)	TON	110	12	\$1,320
3	Concrete Sidewalk 6-inch	SF	2580	5	12,900
4	Mobilization (1 Earthwork & Concrete – 1 for Final Restoration)	EA	2	750	\$1,500
5	Curb Ramp Delectable Warning Field (Yellow)	SF	16	35	\$560
6	Salvaged Topsoil	SY	500	4	\$2,000
7	Mulching	SY	500	1.50	\$750
8	Silt Fence	LF	150	2.50	\$375
9	Tracking Pads	EA	1	750	\$750
10	Grass Seed & Fertilizer	EA	1	400	\$400
11	Traffic Control	LS	1	750	\$750
12	Sawing Concrete	LF	12	45	\$540
13	Playground Equipment	LS	1	50,000	\$50,000
14	Playground Surfacing	LS	1	25,000	\$25,000
15	Water Fountain & Plumbing	LS	1	12,000	\$12,000
16	Engineering	LS	1	12,000	\$12,000
Total – Bridge Rd Park Concrete Sidewalks					\$125,045



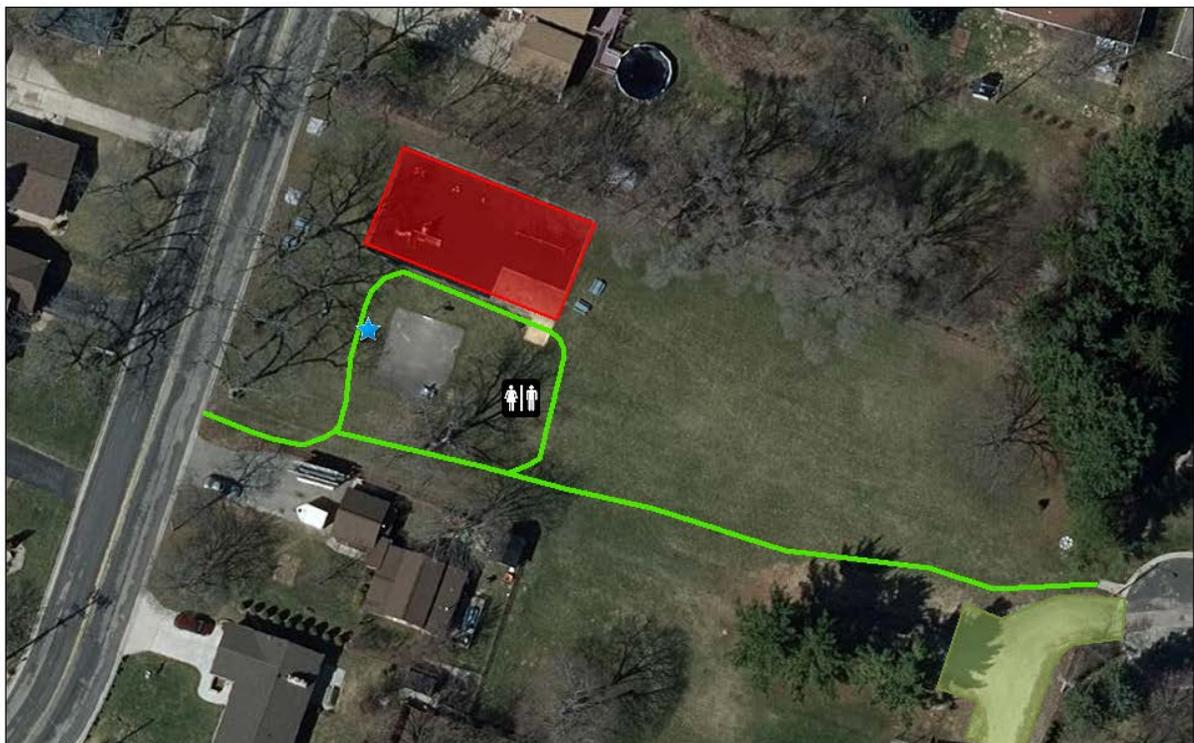


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**OPINION OF PROBABLE COST
 BRIDGE RD PARK – OPTION 2**

Bid Item Ref No	Description	Unit of Measure	Estimated Quantity	Unit Price (\$)	Item Total (\$)
1	Excavation Common (Sidewalk & playground areas)	CY	315	15	\$4,725
2	Base Aggregate Dense 1 1/4 inch (Sidewalk 8' wide)	TON	155	12	\$1,860
3	Concrete Sidewalk 6-inch	SF	3600	5	18,000
4	Mobilization (1 Earthwork & Concrete – 1 for Final Restoration)	EA	2	750	\$1,500
5	Curb Ramp Dectable Warning Field (Yellow)	SF	16	35	\$560
6	Salvaged Topsoil	SY	735	4	\$2,940
7	Mulching	SY	735	1.50	\$1,100
8	Silt Fence	LF	150	2.50	\$375
9	Tracking Pads	EA	1	750	\$750
10	Grass Seed & Fertilizer	EA	1	500	\$500
11	Traffic Control	LS	1	750	\$750
12	Sawing Concrete	LF	12	45	\$540
13	Playground Equipment	LS	1	50,000	\$50,000
14	Playground Surfacing	LS	1	25,000	\$25,000
15	Water Fountain & Plumbing	LS	1	12,000	\$12,000
16	Engineering	LS	1	12,000	\$12,000
Total – Bridge Rd Park Concrete Sidewalks					\$132,600





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**OPINION OF PROBABLE COST
 BRIDGE RD PARK – OPTION 3**

Bid Item Ref No	Description	Unit of Measure	Estimated Quantity	Unit Price (\$)	Item Total (\$)
1	Excavation Common (Sidewalk & playground areas)	CY	400	15	\$6,000
2	Base Aggregate Dense 1 1/4 inch (Sidewalk 8' wide)	TON	270	12	\$3,240
3	Concrete Sidewalk 6-inch	SF	4,560	5	\$22,800
4	3" HMA Pavement (Basketball Court)	TON	25	100	\$2,500
5	Mobilization (1 Earthwork & Concrete – 1 for Final Restoration)	EA	2	750	\$1,500
5	Curb Ramp Dectable Warning Field (Yellow)	SF	16	35	\$560
6	Salvaged Topsoil	SY	900	4	\$3,600
7	Mulching	SY	900	1.50	\$1,350
8	Silt Fence	LF	150	2.50	\$375
9	Tracking Pads	EA	1	750	\$750
10	Grass Seed & Fertilizer	EA	1	1,000	\$1,000
11	Traffic Control	LS	1	750	\$750
12	Sawing Concrete	LF	12	45	\$540
13	Playground Equipment	LS	1	50,000	\$50,000
14	Playground Surfacing	LS	1	25,000	\$25,000
15	Water Fountain & Plumbing	LS	1	12,000	\$12,000
16	Engineering	LS	1	12,000	\$12,000
Total – Bridge Rd Park Concrete Sidewalks					\$143,965



BRIDGE ROAD PARK

MONONA, WI

OPTION #1



(800) 775-8937 Main
(608) 423-7655 Fax
809 Bluebird Pass
Cambridge, WI 53523
info@leerecreation.com
www.leerecreation.com

PROVIDING FUN ACROSS WISCONSIN SINCE 1995



VIEW B



VIEW A

BRIDGE ROAD PARK

MONONA, WI

OPTION #2



(800) 775-8937 Main
(608) 423-7655 Fax
809 Bluebird Pass
Cambridge, WI 53523
info@leerecreation.com
www.leerecreation.com

PROVIDING FUN ACROSS WISCONSIN SINCE 1995



VIEW A

VIEW B

PARK & RECREATION BOARD (Agenda Item 5B)

Meeting Date: January 10, 2017

AGENDA ITEM:

Ahuska Park UniverCity Alliance Report Discussion

REQUESTED BY:

Jake Anderson

POLICY ANALYSIS STATEMENT:

Discussion of the proposed improvements from the UniverCity Alliance report and existing Master Plan for Ahuska Park and what focus engineering should take from here. The UniverCity Alliance report is included in the minutes of this packet, and the 2011 Ahuska Park Master Plan along with notes from the 2014-2018 Parks & Open Space Plan as follows:

Recommendations:

Ahuska Park is an extremely important park for athletic and community events. Every effort should be made to maintain the athletic facilities and make improvements for pedestrian access to those facilities. A separate master plan for Ahuska Park is included in this document. Future Improvements shall include:

- Drainage Improvements for Football Field Entrance
- Updated Master plan for improvements
- Entry Feature for Football Field
- Shelter Improvements (Concrete repairs, Concession Rooms Improvements, Lighting, Signage)
- Utility shed for maintenance equipment
- Baseball field drainage repairs
- Baseball & Football field irrigation systems
- Additional parking lot on east side of park between the baseball diamond and Veteran's Memorial
- Pedestrian walking paths from park shelter to soccer fields, baseball diamond, playground equipment, and Veteran's Memorial
- Tennis court windscreens
- Football Field Bleachers/Press Box/Scoreboard
- Baseball Field Entry Feature

FISCAL IMPACT:

\$25,000 is allocated in the budget for this project

Reviewed By City Administrator

_____ Yes _____ No

Action Taken: _____

Approval: _____

Disapproval: _____

Tabled: _____

Committee Meeting Date: _____

December 13, 2016
Civil Engineering 578: Capstone Design
Final Engineering Design for Improvements to Ahuska Park

Park improvements include the following (refer to Figures 1 and 2):

- | | | |
|---|---------------------------|-------------------------------|
| A. Porous asphalt pathway | D. Rain garden | I. Gravel maintenance path |
| B. Parking lot 34-stall expansion | E. Soccer field regrading | J. Wetland boardwalk pavilion |
| C. Shelter expansion for additional restrooms | F. Grassed swales | K. Wetland boardwalk trail |
| | G. Dog exercise area | L. Observation tower |
| | H. Natural play area | |



Figure 1. Hybrid Design site layout for Ahuska Park.



Figure 2. Hybrid Design boardwalk trail layout and features.

MONTHLY DEPARTMENT HEAD REPORT TO COUNCIL

DEPARTMENT:

**Parks &
Recreation**

MONTH OF: December - 2016

Accomplishments:

- Coordinated and mailed out 2017 Sponsorship Packet, will start contacting individual businesses and organizations in January for partnerships for the coming year.
- Successfully managed two special events in December – Holiday Lights and Breakfast with Santa
- Continue to utilize social media for interaction with public. Follow us on Facebook for up to the minute notifications!
- Had photo op with Monona resident Anne Wellman for receiving \$20,000 check for playground equipment at Schluter Park. Stay tuned for official press release

Major Projects / Issues:

- Working on RFP for Engineering Services for 2017 Capital projects along with securing pricing for equipment purchases approved in the 2017 Capital Budget
- Reviewing submitted final reports for Fall UniverCity Alliance projects and coordinating with faculty on Spring Semester projects. The focus will be on Winnequah Park for the Spring Semester
- Schluter Park shelter was vandalized with graffiti on the CMU Block. Nothing definite on security footage for who did it. Staff attempts to remove were unsuccessful, a professional company will be removing when the temps get above 20.

In Progress / Routine Duties:

- **Parks** – Preparing for Winter Ice Skating on the lagoon with warming house projects, equipment preparation, and snow removal from the lagoon started this month. Sidewalk and campus snow removal for 3 snow events in December
- **Recreation** – Great participation in ice skate rentals and concession over Christmas vacation. The ice rink will be open on Fridays 3:00 – 7:00 pm, & Saturdays/Sundays 11:00 am – 7:00 pm as long as we have good ice. Winter recreation programs start in January
- **Pool** – Updating job descriptions for seasonal employment applications which will be available in January
- **Special Events** – Coordinated/Ran Holiday Lights on Friday December 9th with around 50 people participating, and Breakfast with Santa on Saturday December 10th with over 450 participants. Great job to staff!

Upcoming Objectives / Events:

- Parks & Recreation Board Meeting January 10th to discuss Bridge Rd Playground Project
- Candlelit Snowshoe Hike on Sat January 21st
- Updating Facility Use Agreements for all groups utilizing Monona facilities.

Personnel:

- Finalizing staff evaluations.



MONTHLY DEPARTMENT HEAD REPORT TO COUNCIL



Photos of graffiti at Schluter Park. A police report was filed and security video was reviewed and looking for potential persons of interest. The same symbol was found on a new City of Madison park shelter. A professional graffiti removal company has been contracted for removal because of the cold temperatures and normal graffiti remover that city staff uses does not work.



Thanks to Special Event Sponsors Chad's Design, Lauer Realty, and Monona Grove Business Men's Association for helping purchase new lights for around the Gazebo this year!

MONTHLY DEPARTMENT HEAD REPORT TO COUNCIL



Parks Staff has worked extremely hard on clearing the snow and grooming the lagoon by shaving down the high spots and spraying water to make a smooth layer of ice.



A lot of smiling faces and FUN happening on the lagoon over winter break.